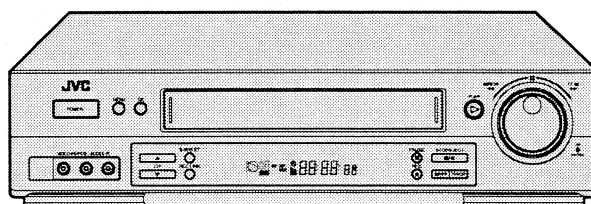
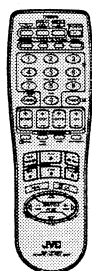


JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-S3500U



S VHS

Hi-Fi

VCRplus+
Cable Box
Control
Easy Taping.

MOVIE ADVANCE™

Super VHS ET

SPECIFICATIONS

GENERAL

Power requirement	: AC 120 V~, 60 Hz
Power consumption	
Power on	: 28 W
Power off	: 3 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: -20°C to 60°C (-4°F to 140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 401 x 94 x 340 mm (15-13/16" x 3-3/4" x 13-7/16")
Weight	: 3.8 kg (8.4 lbs)
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/ Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 240 lines (VHS) : 400 lines (S-VHS)
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) : S-Video connectors (IN x 1, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2-13
UHF	: Channels 14-69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/ 8 programs
Memory backup time	: Approx. 10 min.

ACCESSORIES

Provided accessories	: RF cable (F-type), Infrared remote control unit, "AA" battery x 2, Audio/Video Cable, S-Video cable (4-pin), Controller
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*Specifications shown are for SP mode unless otherwise specified.
E. & O.E. Design and specifications subject to change without
notice.*

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

●Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the $\triangle$ symbol and shaded (▨) parts are critical for safety.
Replace only with specified part numbers.
Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

5. Use specified insulating materials for hazardous live parts.
Note especially:
1) Insulation Tape 3) Spacers 5) Barrier
2) PVC tubing 4) Insulation sheets for transistors

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

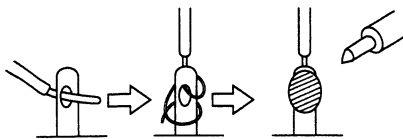


Fig.1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

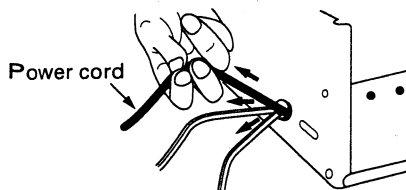


Fig.2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector

In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

1) **Connector part number** : E03830-001

2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.

3) **Replacement procedure**

(1) Remove the old connector by cutting the wires at a point close to the connector.

Important : Do not reuse a connector (discard it).

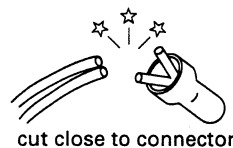


Fig.3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

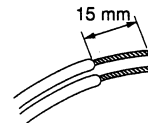


Fig.4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

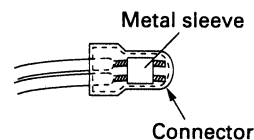


Fig.5

(4) As shown in Fig.6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

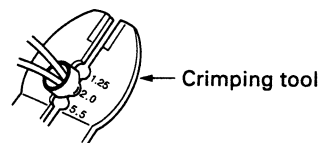


Fig.6

(5) Check the four points noted in Fig.7.

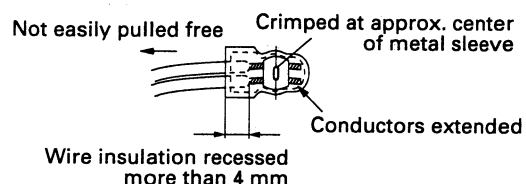


Fig.7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

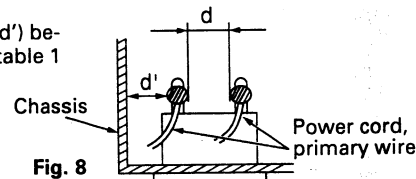
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.



4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

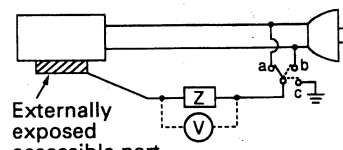


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

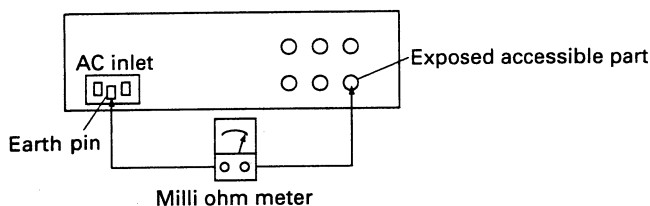


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	—	AC 1 kV 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm (Power cord)}$ $d' \geq 6 \text{ mm (Primary wire)}$

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	$1 \text{ k}\Omega$	$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	$0.15 \mu\text{F}$ and $1.5 \text{ k}\Omega$	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	$2 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		$50 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Dear Customer,

Thank you for purchasing the JVC VHS video cassette recorder. Before use, please read the safety information and precautions contained in the following pages to ensure safe use of your new VCR.

CAUTIONS

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:
TO PREVENT FIRE OR SHOCK
HAZARD, DO NOT EXPOSE THIS
UNIT TO RAIN OR MOISTURE.

CAUTION:

This video cassette recorder should be used with AC 120V~, 60Hz only.
 To prevent electric shocks and fire hazards, DO NOT use any other power source.

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CAUTION:

Changes or modifications not approved by JVC could void user's authority to operate the equipment.

Failure to heed the following precautions may result in damage to the VCR, remote control or video cassette.

1. DO NOT place the VCR . . .

- ... in an environment prone to extreme temperatures or humidity.
- ... in direct sunlight.
- ... in a dusty environment.
- ... in an environment where strong magnetic fields are generated.
- ... on a surface that is unstable or subject to vibration.

2. DO NOT block the VCR's ventilation openings.**3. DO NOT place heavy objects on the VCR or remote control.****4. DO NOT place anything which might spill on top of the VCR or remote control.****5. AVOID violent shocks to the VCR during transport.******MOISTURE CONDENSATION**

Moisture in the air will condense on the VCR when you move it from a cold place to a warm place, or under extremely humid conditions—just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the VCR's power turned on for a few hours to let the moisture dry before inserting a tape.

****ABOUT HEAD CLEANING**

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Be sure to contact your nearest JVC dealer if such troubles occur.

VCR Plus+C³ and PlusCode are trademarks of Gemstar Development Corporation.

The VCR Plus+ system is manufactured under license from Gemstar Development Corporation.

DSS™ is an official trademark of DIRECTV, Inc., a unit of GM Hughes Electronics. PRIMESTAR is a registered service mark of Primestar Partners, L.P. DISH Network™ is a trademark of EchoStar Communications Corporation.

MOVIE ADVANCE™ is a trademark of SRT, Inc. A Jerry Iggulden invention licensed in association with Arthur D. Little Enterprises, Inc.



- Cassettes marked "S-VHS" and "VHS" can be used with this video cassette recorder. However, S-VHS recordings are possible only with cassettes marked "S-VHS". By using S-VHS ET it is possible to record and play back with S-VHS picture quality on VHS cassettes with this VCR.
- As an ENERGY STAR® Partner, JVC has determined that this product or product model meets the ENERGY STAR® guidelines for energy efficiency.

IMPORTANT PRODUCT SAFETY INSTRUCTIONS

Electrical energy can perform many useful functions. But improper use can result in potential electrical shock or fire hazards. This product has been engineered and manufactured to assure your personal safety. In order not to defeat the built-in safeguards, observe the following basic rules for its installation, use and servicing.

ATTENTION:

Follow and obey all warnings and instructions marked on your product and its operating instructions. For your safety, please read all the safety and operating instructions before you operate this product and keep this booklet for future reference.

INSTALLATION**1. Grounding or Polarization**

(A) Your product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.

If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

(B) Your product may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature.

If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

2. Power Sources

Operate your product only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. If your product is intended to operate from battery power, or other sources, refer to the operating instructions.

3. Overloading

Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

4. Power Cord Protection

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

5. Ventilation

Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered.

- Do not block the openings by placing the product on a bed, sofa, rug or other similar surface.
- Do not place the product in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

6. Wall or Ceiling Mounting

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

ANTENNA INSTALLATION INSTRUCTIONS**1. Outdoor Antenna Grounding**

If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding connectors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

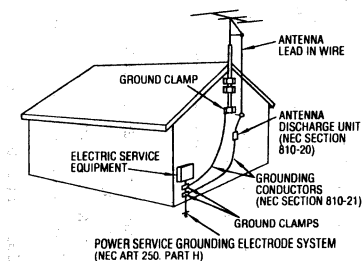
2. Lightning

For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

3. Power Lines

An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE, ANSI/NFPA 70



NEC - NATIONAL ELECTRICAL CODE

USE

1. Accessories

To avoid personal injury:

- Do not place this product on an unstable cart, stand, tripod, bracket, or table. It may fall, causing serious injury to a child or adult, and serious damage to the product.
- Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the product.
- Use a mounting accessory recommended by the manufacturer and follow the manufacturer's instructions for any mounting of the product.
- Do not try to roll a cart with small casters across thresholds or deep-pile carpets.

2. Product and Cart Combination

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

PORTABLE CART WARNING
(Symbol provided by RETAC)



3. Water and Moisture

Do not use this product near water—for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool and the like.

4. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

5. Attachments

Do not use attachments not recommended by the manufacturer of this product as they may cause hazards.

6. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

7. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

SERVICING

1. Servicing

If your product is not operating correctly or exhibits a marked change in performance and you are unable to restore normal operation by following the detailed procedure in its operating instructions, do not attempt to service it yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

2. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance—this indicates a need for service.

3. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

4. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

HOW TO USE THIS INSTRUCTION MANUAL

- All major sections and subsections are listed in the Table Of Contents on page 5. Use this when searching for information on a specific procedure or feature.
- The Index on pages 59–62 lists frequently-used terms, and the number of the page on which they are used or explained in the manual. This section also illustrates the controls and connections on the front and rear panel, the front display panel and the remote control.
- The mark signals a reference to another page for instructions or related information.
- Operation buttons necessary for the various procedures are clearly indicated through the use of illustrations at the beginning of each major section.

BEFORE YOU INSTALL YOUR NEW VCR . . .

. . . please read the sections/literature listed below.

- "Cautions" on page 2
- "Important Products Safety Instructions" on the previous pages

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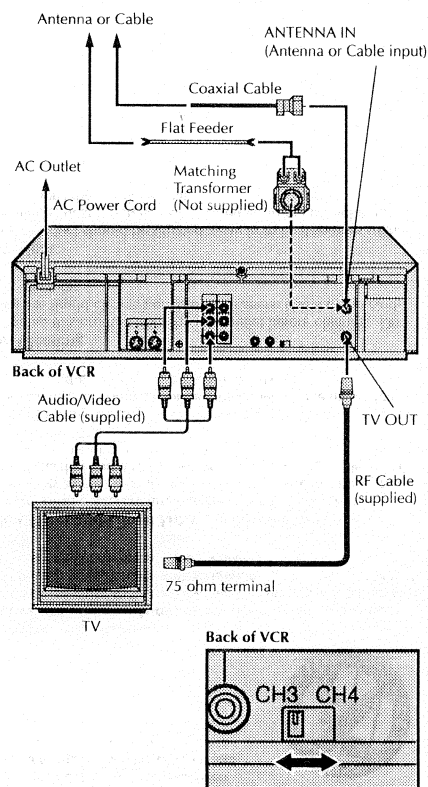
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Connections



NOTES:

- The VCR channel is the channel on the TV which will display the audio and video signals from the VCR. The VCR's CH3-CH4 switch, on the back of the VCR, sets the VCR channel to CH3 or CH4.
- The CH3-CH4 switch is preset to the CH3 position. Set to CH4 if CH3 is used for broadcasting in your area and set the channel on the TV to correspond to the VCR's CH3-CH4 switch setting.
- If you are connected to the TV using the RF connector, you may need to press CH UP and then CH DOWN on the TV when switching between the TV and VCR input modes, to maintain good picture quality.
- Even if you are using AV cables to connect your VCR to your TV, you must also connect it using the RF cable. This will ensure that you can record one show while watching another (pg. 34).
- For full identification of the VCR's rear panel, refer to the Index (REAR VIEW pg. 61).

Basic Connections

CHECK CONTENTS

Make sure the package contains all of the accessories listed in "SPECIFICATIONS" (pg. 63).

SITUATE VCR

Place the VCR on a stable, horizontal surface.

CONNECT VCR TO TV

The connection method you use depends on the type of TV you have.

RF Connection

- To Connect To A TV With NO AV Input Terminals . . .
 - Disconnect the TV antenna from the TV.
 - Connect the TV antenna cable to the ANTENNA IN jack on the rear of the VCR.
 - Connect the supplied RF cable between the TV OUT jack on the rear of the VCR and the TV's antenna terminal. Set TV on CH3 or CH4 corresponding to the CH3 - CH4 switch setting on the back of the VCR.

AV Connection

- To Connect To A TV With AV Input Terminals . . .
 - Connect the antenna, VCR and TV as shown in the illustration.
 - Connect an Audio/Video Cable between the AUDIO OUT and VIDEO OUT jacks on the rear of the VCR and the AV IN jacks on the TV. Set your TV in video input mode or AV input mode. Refer to the TV Instruction Manual.

S-VIDEO Connection

- If you have a TV with S-VIDEO input terminals, see "S-VIDEO Connection" on page 7.

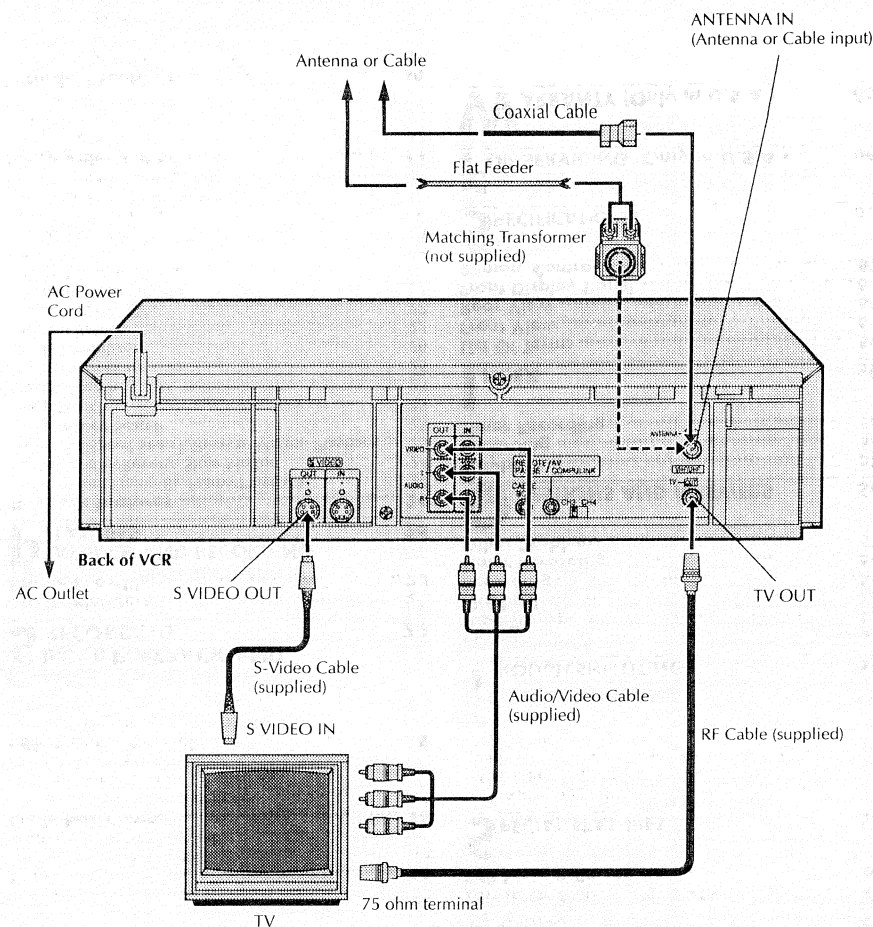
CONNECT VCR TO POWER SOURCE

Connect the power plug to an AC outlet.

- The clock and tuner channels will automatically be set when the antenna is connected and when the AC is first connected to the VCR (pg. 8). (If "Auto" or "CH" is displayed on the front display panel before the VCR is powered on, the clock and tuner channels are being set automatically. Wait for the time to be displayed on the front display panel before powering on the VCR.)

FINAL PREPARATION FOR USE

Power on the VCR and if you are connected to the TV using the RF connector, select the VCR channel (3 or 4) by setting the switch on the rear of the VCR as shown in the illustration. You can now perform simple playback (pg. 22) or simple recording (pg. 23).



NOTES:

- To make the most of the Super VHS picture performance we recommend that you use the supplied S-VIDEO cable to connect your VCR to a TV with an S-VIDEO input connector.
- To operate the VCR with your TV using the S-VIDEO connection, set your TV to the AV mode using the TV's remote control. You can also use the TV/VCR button on the VCR's remote control to set your TV to the AV mode. (pg. 51)

S-VIDEO Connection

CONNECT VCR TO TV

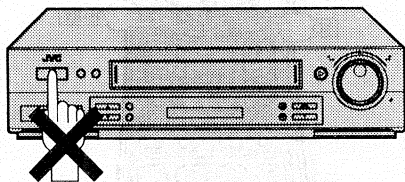
- Connect both the RF cable and the AV cables to the TV as explained in step 3 of "Basic Connections" (pg. 6).
- Connect the S-Video cable between the S-VIDEO OUT jack on the rear of the VCR and the S-VIDEO IN jack on the TV.

Plug & Play

Auto Clock Set/Auto Tuner Set

ATTENTION

If you use a cable box, Plug & Play will not function; set the clock and tuner channels manually. (☞ pg.11 – 15)



IMPORTANT

- Don't press any buttons on the VCR or remote while Plug & Play is in progress.
- If you perform Plug & Play successfully, there's no need to perform the Clock (☞ pg. 11) and Tuner (☞ pg. 14) procedures. If, however, you want to add or delete channels, refer to "Add Or Delete A Channel" on page 15.

The Plug & Play function sets the clock and tuner channels automatically when power is first connected to the VCR. The antenna cable must be connected for the Plug & Play function.

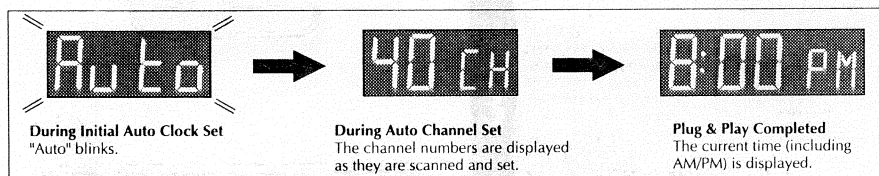
The time and date can be set automatically from clock setting data that is transmitted by one of the regular TV broadcast channels. We call this TV channel the "Host Channel" and it is a PBS channel in your area.

1 PLUG & PLAY SETUP

Connect the antenna cable to the VCR (☞ pg. 6). Then connect the VCR's power plug to an AC outlet. Do not power on the VCR. The clock and tuner channels will be set automatically.

NOTES:

- Auto clock set is performed first. The auto clock set function scans all the channels received by your VCR to find the Host Channel and then sets the clock. "Auto" blinks on the front display panel during Auto clock set.
- Auto channel set is performed next. The auto channel set function scans all the channels that are receivable by your VCR. It then automatically assigns each receivable channels to the CH▲∞ (+/-) buttons. It skips non-receivable channels. During auto channel set the channel numbers are displayed as they are scanned and set.
- When Plug & Play has been completed successfully the correct time is displayed.
- If an incorrect time or "–:–:–" appears on the display panel, see "What To Do If Plug & Play Has Failed" on next page.



* If an incorrect time or "–:–:–" appears on the display panel, see "What To Do If Plug & Play Has Failed" on next page.

INFORMATION

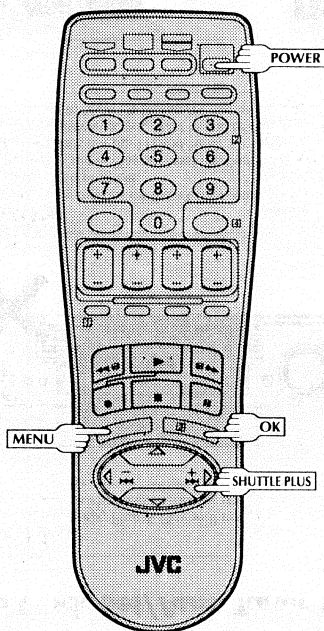
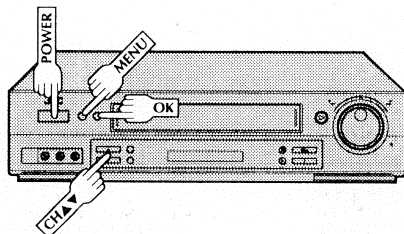
- If "AUTO CLOCK" is set to "ON" at the Clock Set screen on page 12, the clock will be adjusted automatically by the host channel every hour on the hour (except for 11:00 PM, midnight, 1:00 AM and 2:00 AM) by the incoming PBS channel clock setting data. (This automatic clock adjustment can only be performed when the VCR's power is turned off. The clock will be adjusted on the hour based on the time displayed on the VCR, not on the actual real time.) The default setting of "AUTO CLOCK" is "ON".
- If the memory backup fails, because of a power outage or because the AC was removed from the VCR, Plug & Play will be performed when power is restored to the VCR.

What To Do If Plug & Play Has Failed

- If an incorrect time is displayed on the front display panel, you may be receiving the clock setting data of a PBS channel from an adjacent time zone, or an incorrect PBS channel from a cable TV system. In this case, perform the Semi-Auto (☞ pg. 12) or Manual Clock Set (☞ pg. 13) procedure. Auto channel set has already taken place and it need not be set again.
- If "–:–:–" appears on the display, your antenna cable may not be connected to the VCR or there may not be a Host PBS signal available in your area. Ensure that the antenna cable is connected correctly. Then power on and power off the VCR; the Plug & Play function will be automatically reactivated and "Auto" will be displayed on the VCR's front panel. If Plug & Play is not performed but the antenna cable is connected correctly, perform the Manual Clock Set procedure (☞ pg. 13). Auto channel set has not yet taken place, so please also perform the "Set Receivable Channels" procedure (☞ pg. 14).

Language

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



This VCR offers you the choice to view on-screen messages in English, Spanish or French (not including messages superimposed on the TV picture). Select the desired language using this procedure. The default setting is "ENGLISH".

TURN ON THE VCR

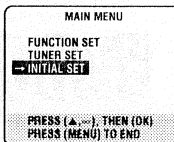
Press **POWER**.

ACCESS MAIN MENU SCREEN

Press **MENU**.

ACCESS INITIAL SET SCREEN

At the Main Menu screen, move the highlight bar (arrow) to "INITIAL SET" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸**.



SELECT LANGUAGE

Move the highlight bar (arrow) to "LANGUAGE" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸** to select the desired language.

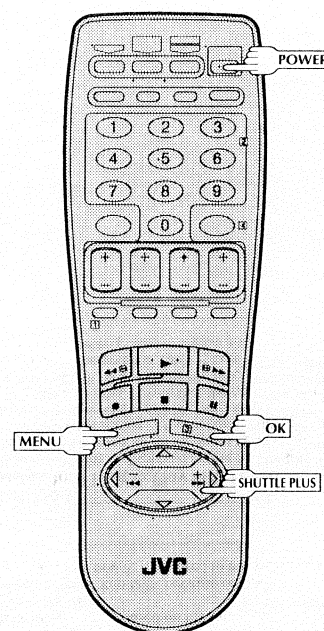
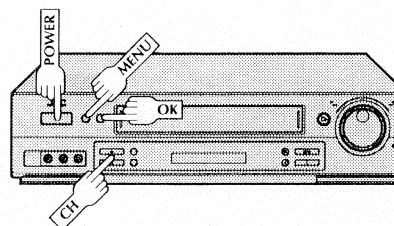


RETURN TO NORMAL SCREEN

Press **MENU**.

Clock

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



Perform clock setting only if the clock has not been set correctly by the Plug & Play function or you use a cable box. Access the Clock Set screen to perform the Semi-Auto or Manual clock setting procedure. Each procedure starts from step 5. If you use a cable box, set the clock manually. (pg. 13)

Preparation

TURN ON THE VCR

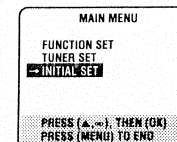
Press **POWER**.

ACCESS MAIN MENU SCREEN

Press **MENU**.

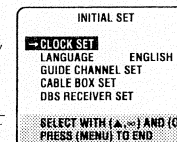
ACCESS INITIAL SET SCREEN

At the Main Menu screen, move the highlight bar (arrow) to "INITIAL SET" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸**.

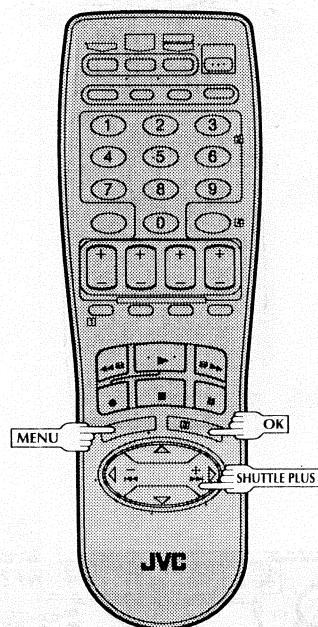
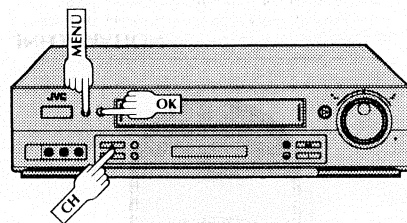


ACCESS CLOCK SET SCREEN

Move the highlight bar (arrow) at the Initial Set screen to "CLOCK SET" by pressing **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸**.



• "CABLE BOX USERS SET CLOCK MANUALLY" appears on the screen for about 5 seconds, then the Clock Set screen appears.



Semi-Auto

You can change the Host Channel/D.S.T./Time Zone setting manually.

5 SET AUTO CLOCK TO ON

At the Clock Set screen, press **OK** or **SHUTTLE PLUS** $\triangleright$ repeatedly to move the highlight bar to "AUTO CLOCK" and press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to set to "ON".

- a- To select the Host Channel — go to step 6
- b- To select the D.S.T. mode — go to step 7
- c- To select the Time Zone — go to step 8

CLOCK SET		
TIME	DATE	YEAR
1:00PM	12/24	98 THU
AUTO CLOCK: ON		
HOST CH	: AUTO (CATV)	
D.S.T.	: AUTO	
TIME ZONE	: AUTO	
PRESS (A, *), THEN (OK)		
PRESS (MENU) TO END		

NOTE:

The time that has been set previously will be erased when "AUTO CLOCK", "HOST CH", "D.S.T." or "TIME ZONE" setting is changed.

6 SELECT HOST CHANNEL

You can either select "AUTO" or enter a PBS channel number. Move the highlight bar to "HOST CH" by pressing **OK** or **SHUTTLE PLUS** $\triangleright$, then press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to set to "AUTO" or the desired PBS channel number.

NOTE:

There are some PBS channels that do not transmit clock setting data.

7 SELECT D.S.T. MODE

You have three choices:

- a- Select "AUTO" and the adjustment to your VCR's clock will be made according to the incoming signal from the host channel.
- b- Select "ON" and the adjustment will be made based on the clock itself.
- c- Select "OFF" if Daylight Saving Time does not apply to you.

Move the highlight bar to "D.S.T." by pressing **OK** or **SHUTTLE PLUS** $\triangleright$, then press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to select the desired mode.

**AUTO DAYLIGHT SAVING TIME

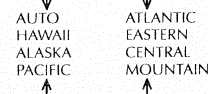
This function enables automatic adjustment of the VCR's clock at the start and end of Daylight Saving Time.

With Auto DST activated, ...

- ... on the first Sunday of April at 2:00 AM, the clock is adjusted to 3:00 AM.
- ... on the last Sunday of October at 2:00 AM, the clock is adjusted to 1:00 AM.

8 SELECT TIME ZONE

You can select the time zone automatically or manually. Move the highlight bar to "TIME ZONE" by pressing **OK** or **SHUTTLE PLUS** $\triangleright$, then press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to select "AUTO" or the desired time zone.



NOTE:

If an incorrect time is displayed by the Plug & Play function, you may be receiving the clock setting data of a PBS channel from an adjacent time zone or from an incorrect PBS channel from a cable TV system. If you selected "AUTO" for the host channel in step 6, be sure to select the correct time zone manually.

9 RETURN TO NORMAL SCREEN

Press **MENU**.

IMPORTANT

Turn the VCR off after performing the Semi-Auto Clock Set procedure. "Auto" will appear on the front display panel when the clock is being set. The current time will appear automatically when the clock is set.

Manual

5 SET TIME

Press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ until the desired time appears, then press **OK** or **SHUTTLE PLUS** $\triangleright$.

- Press and hold **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to change the time by 30-minute increments.
- When the time is entered manually, "AUTO CLOCK" will be automatically set to "OFF", and "HOST CH" and "TIME ZONE" will disappear.

CLOCK SET

TIME DATE YEAR
1:00 AM 1 1 98

AUTO CLOCK: ON

HOST CH : AUTO (CATV)

D.S.T. : AUTO

TIME ZONE : AUTO

PRESS (▲), THEN (OK)

PRESS (MENU) TO END

6 SET DATE

Press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ until the desired date appears, then press **OK** or **SHUTTLE PLUS** $\triangleright$.

- Press and hold **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to change the date by 15-day increments.

7 SET YEAR

Press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ until the desired year appears, then press **OK** or **SHUTTLE PLUS** $\triangleright$ twice.

8 SELECT D.S.T. MODE

Press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$ to select the desired mode.

- a- Set to "ON" so that the adjustment to your VCR's clock will be made on the clock itself.
- b- Set to "OFF" if Daylight Saving Time does not apply to you.

9 START CLOCK

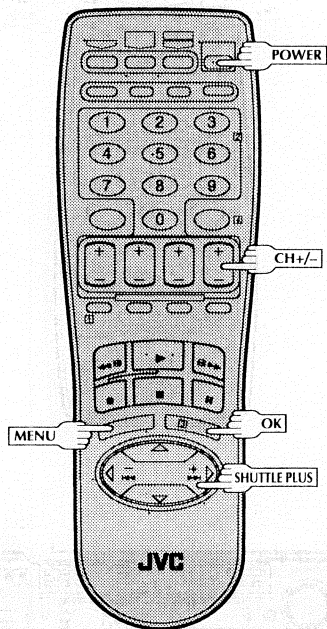
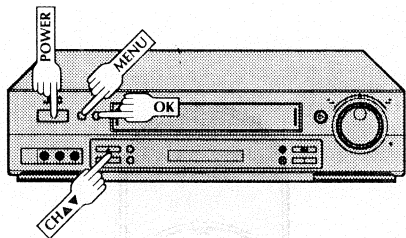
Press **MENU** and normal screen appears.

To Make Corrections

Press **OK** or **SHUTTLE PLUS** $\triangleright$ until the item you want to change blinks, then press **CH** $\blacktriangle$ or **SHUTTLE PLUS** $\triangle\triangledown$.

Tuner

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



INFORMATION

The VCR detects the band (TV or CATV) and selects the correct band automatically during Auto Channel Set. The selected band will be displayed on the right side of "BAND" on the Tuner Set screen.

Set Receivable Channels

1 TURN ON THE VCR

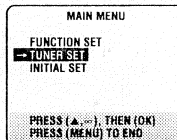
Press POWER.

2 ACCESS MAIN MENU SCREEN

Press MENU.

3 ACCESS TUNER SET SCREEN

Move the highlight bar (arrow) to "TUNER SET" by pressing CH▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▷.



4 PERFORM AUTO CHANNEL SET

Move the highlight bar (arrow) to "AUTO CHANNEL SET" by pressing CH▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▷.

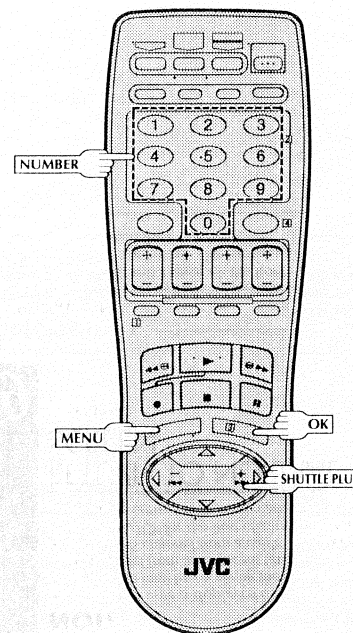
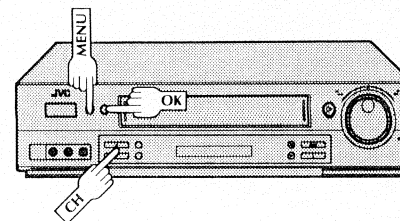
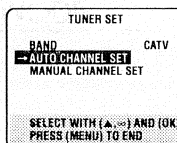
- Receivable channels in your area are automatically assigned to the CH▲ (+/-) buttons, and non-receivable channels are skipped.

NOTES:

- At the end of Auto Channel Set, "SCAN COMPLETED" appears on screen.
- If the scan was unsuccessful, "SCAN COMPLETED-NO SIGNAL" appears on screen. Check the connections and start again.

5 RETURN TO NORMAL SCREEN

Press MENU.



Add Or Delete A Channel

1 ACCESS MAIN MENU SCREEN

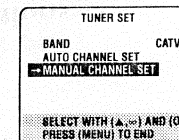
Press MENU.

2 ACCESS TUNER SET SCREEN

Move the highlight bar (arrow) to "TUNER SET" by pressing CH▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▷.

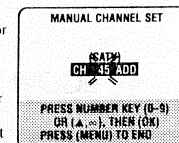
3 ACCESS MANUAL CHANNEL SET SCREEN

Move the highlight bar (arrow) to "MANUAL CHANNEL SET" by pressing CH▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▷.



4 ADD OR SKIP DESIRED CHANNEL

Input the channel number using the NUMBER keys or by pressing CH▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▷ to set to "ADD" or "SKIP" as required. Repeat for each channel you want to add or skip.



5 RETURN TO NORMAL SCREEN

Press MENU.

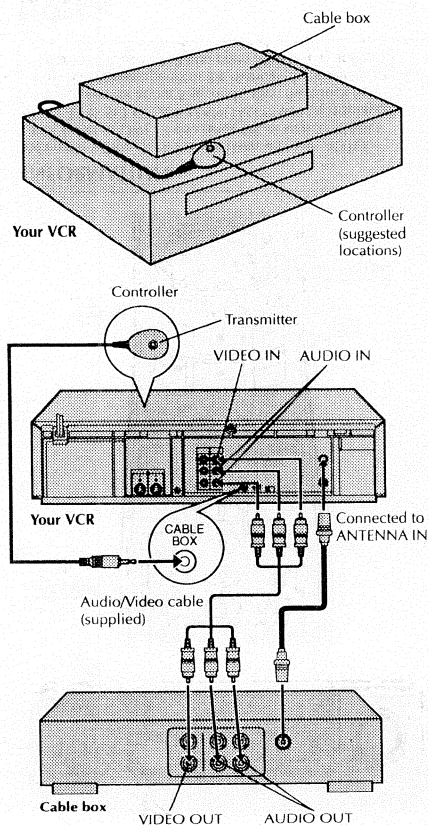
Cable Box Control

Suggested Location

Place the cable box on top of the VCR. Attach the VCR's Controller to the top of the VCR with the Controller's transmitter pointed towards the cable box's remote sensor.

ATTENTION:

The Controller can also control a DBS receiver. If both a cable box and a DBS receiver are used, position the controller so its signal reaches the remote control sensors of both the cable box and DBS receiver.



This procedure is required if you receive your TV channels through a cable box (descrambler). The Controller allows the VCR to automatically switch the cable box channel during timer-recording. The Controller is effective for recording shows that have been programmed using VCR Plus+ (pg. 38) or Express Timer Programming (pg. 42).

Situate And Connect Controller

1 SITUATE CONTROLLER

Place the Controller so that the path between its transmitter and the cable box's remote sensor is unobstructed.

2 ATTACH CONTROLLER

Fasten securely using the supplied adhesive strip.

3 CONNECT CABLE BOX TO VCR

The connection method depends on the type of cable box you have.

If your cable box has AUDIO and VIDEO OUT connectors . . .

... connect them to the AUDIO and VIDEO IN connectors on your VCR. Set the VCR to channel "L-1" for the rear AUDIO and VIDEO IN connectors, or channel "F-1" for the front AUDIO and VIDEO IN connectors to use the cable box.

If your cable box doesn't have AUDIO and VIDEO OUT connectors . . .

... connect the antenna output connector on the cable box to the ANTENNA IN connector on the rear of your VCR.

Set the VCR tuner to the same channel as the cable box RF output (see page 17 also).

NOTE:

When connecting your cable box refer to its instruction manual.

4 CONNECT CONTROLLER TO VCR

Connect to the CABLE BOX connector on your VCR.

About Your Cable Box

This VCR has two separate methods to control your Cable Box.

- The VCR's Wireless Remote Control Unit can control your Cable Box. This eliminates the need for a separate Cable Box Remote Control Unit.
- The VCR's Controller can also control your Cable Box. This allows the VCR to change your Cable Box's channel number during timer recording.

Each method must be set up separately. To set up the VCR's Remote Control unit, refer to page 52. To set up the Controller go to page 17.

Set Cable Box Output Channel & Cable Box Brand

1 TURN ON CABLE BOX

Select a channel other than channel 9 on your cable box.

2 TURN ON THE VCR

Press **POWER**.

3 ACCESS MAIN MENU SCREEN

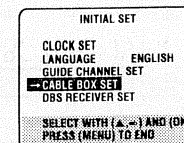
Press **MENU**.

4 ACCESS INITIAL SET SCREEN

Press **CH** Δ or **SHUTTLE PLUS** Δ to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **SHUTTLE PLUS** $\triangleright$.

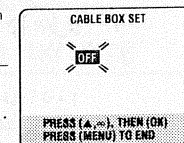
5 ACCESS CABLE BOX SET SCREEN

Press **CH** Δ or **SHUTTLE PLUS** Δ to move the highlight bar (arrow) to "CABLE BOX SET", then press **OK** or **SHUTTLE PLUS** $\triangleright$.



6 SELECT CABLE BOX OUTPUT CHANNEL

Your selection depends on how your cable box is connected to your VCR.



If your cable box is connected to your VCR using an RF connection . . .

... press **CH** Δ or **SHUTTLE PLUS** Δ until the channel number representing the cable box's output (CH2 - CH9) appears on the screen.

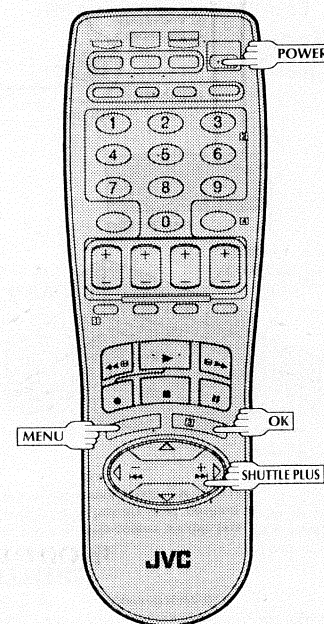
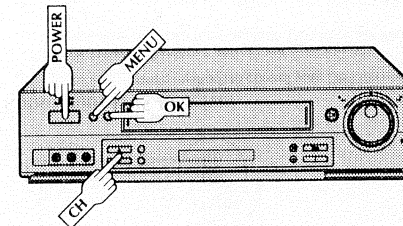
If your cable box is connected to your VCR's FRONT AUDIO/VIDEO IN connectors . . .

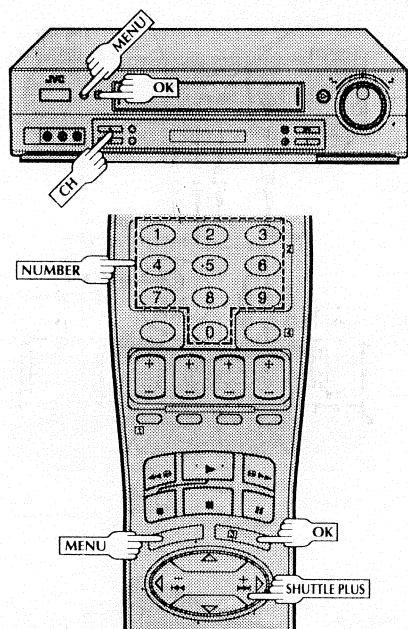
... press **CH** Δ or **SHUTTLE PLUS** Δ until "ON F-1 (FRONT)" appears on the screen.

If your cable box is connected to your VCR's REAR AUDIO/VIDEO IN connectors . . .

... press **CH** Δ or **SHUTTLE PLUS** Δ until "ON L-1 (REAR)" appears on the screen.

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).





INFORMATION

When the VCR's clock has not been set (with AUTO CLOCK set to ON), if you press **OK** in step 7, "CABLE BOX USERS SET CLOCK MANUALLY" will be displayed on the screen for about 5 seconds, then the Clock Set screen will appear; perform the manual clock setting procedure on page 13. If you press **MENU** after the clock has been set, the Cable Box Brand Set screen appears.

NOTES:

- Although the supplied Controller is compatible with many different cable box brands, it is possible that it will not work with your cable box.
- If your cable box doesn't respond to any code between 1 and 25, you can't use the Controller to change cable box channels. In this case, make sure to leave the cable box turned on and tuned to the proper channel before the scheduled start of timer recording. Please contact your cable company about the possibility of exchanging your current cable box with one that is compatible with your VCR.
- The VCR can only change the cable box channel through the Controller during timer recording.
- If your cable box is one that can't be operated with a remote control (because it has no remote sensor), you can't use the Controller to change its channels. Make sure to leave the cable box turned on and tuned to the proper channel before the scheduled start of timer recording.
- If the VCR's memory backup expires because of a power failure, set the cable box output channel and brand again.
- For customers in U.S.A.: If you are unable to set the Controller, please contact JVC toll free at 1-800-252-5722.

ACCESS CABLE BOX BRAND SET SCREEN

Press **OK**.

ENTER CABLE BOX BRAND

Press the appropriate **NUMBER** keys to enter the Cable Box Code from the CABLE BOX BRAND LIST shown below, then press **OK**.

CABLE BOX BRAND SET



PRESS NUMBER KEY (0-9) THEN (OK) TO TEST
PRESS (MENU) TO END

- If the cable box's channel changes to 9, setting is complete. Press **OK** and "CABLE BOX CONTROL IS ON" appears on the screen for about 5 seconds, then it returns to the normal screen.
- If the cable box's channel does not change to 9, press **CH ▲** or **SHUTTLE PLUS ▲** to move the highlight bar (arrow) to "NO", then press **OK**. By entering another code, repeat step 8 until the cable box's channel changes to 9.
- If the channel does not change after going through all the code numbers listed for your model of cable box, then try all the other numbers between 1 and 25.

CABLE BOX BRAND LIST

BRAND	CODE
ARCHER	1, 5, 17
CABLETENNA	1, 17
CABLEVIEW	15, 16, 17, 21, 25
CITIZEN	15, 16, 17, 21, 25
CURTIS	2
DIAMOND	1, 17
EASTERN	19
GC BRAND	15, 16, 17, 21, 25
GEMINI	15
GENERAL INSTRUMENTS	1, 4, 6, 11, 12, 15
HAMLIN	10, 18, 19, 23
JASCO	15
JERROLD	1, 4, 6, 11, 12, 15
NOVAVISION	2
OAK	7, 20
PANASONIC	13, 14
PULSER	15, 16, 17, 21, 25
RCA	13, 14
REGAL	10, 18, 19, 23
REGENCY	19
REMBRANDT	1, 16, 17
SAMSUNG	5, 16, 24
SCIENTIFIC ATLANTA	2
SIGMA	7, 20
SL MARX	5, 16, 17, 24, 25
SPRUCER	13, 14
STARGATE	5, 15, 16, 17, 21, 24, 25
TELEVIEW	5, 16, 24
TOCOM	1, 4, 16
UNIKA	1, 17
UNIVERSAL	16, 17, 25
VIDEOWAY	3, 9, 22
ZENITH	3, 9, 22

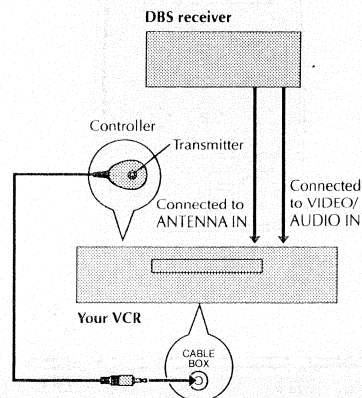
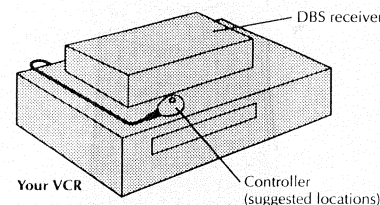
DBS Receiver Control

Suggested Location

Place the DBS (Direct Broadcast Satellite) receiver on top of the VCR. Attach the VCR's Controller to the top of the VCR with the Controller's transmitter pointed towards the DBS receiver's remote sensor.

ATTENTION:

The Controller can also control a cable box. If both a DBS receiver and a cable box are used, position the controller so its signal reaches the remote control sensors of both the DBS receiver and cable box.



About Your DBS Receiver

This VCR has two separate methods to control your DBS Receiver.

- The VCR's Wireless Remote Control Unit can control your DBS Receiver. This eliminates the need for a separate DBS Receiver Remote Control Unit.
- The VCR's Controller can also control your DBS Receiver. This allows the VCR to change your DBS receiver's channel number during timer recording.

Each method must be set up separately. To set up the VCR's Remote Control unit, refer to page 53. To set up the Controller go to page 20.

The following procedure is required if you receive satellite channels through a DBS (Direct Broadcast Satellite) Receiver. The Controller allows the VCR to automatically switch the DBS Receiver's channels during timer recording.

NOTES:

- The VCR can automatically change the DBS Receiver channels using the controller when the VCR has been programmed using Express Timer Programming (pg. 42). Because satellite programming does not use PlusCode, the Controller can not change the DBS Receiver channels during VCR Plus+ Timer Recording.
- If a cable box is also used it is recommended that you connect the DBS receiver to your VCR's AV inputs and the cable box to your VCR's antenna input.

Situate And Connect Controller

1 SITUATE CONTROLLER

Place the Controller so that the path between its transmitter and the DBS receiver's remote sensor is unobstructed.

2 ATTACH CONTROLLER

Fasten securely using the supplied adhesive strips.

3 CONNECT DBS RECEIVER TO VCR

The connection method depends on the type of DBS receiver you have.

If your DBS receiver has AUDIO and VIDEO OUT connectors . . .

. . . connect them to the AUDIO and VIDEO IN connectors on your VCR. Set the VCR to channel "L-1" for the rear AUDIO and VIDEO IN connectors, or channel "F-1" for the front AUDIO and VIDEO IN connectors to use the DBS receiver.

If your DBS receiver doesn't have AUDIO and VIDEO OUT connectors . . .

. . . connect the antenna output connector on the DBS receiver to the ANTENNA IN connector on the rear of your VCR.

Set the VCR's tuner to the same channel as the DBS receiver's RF output. (See page 20 also.)

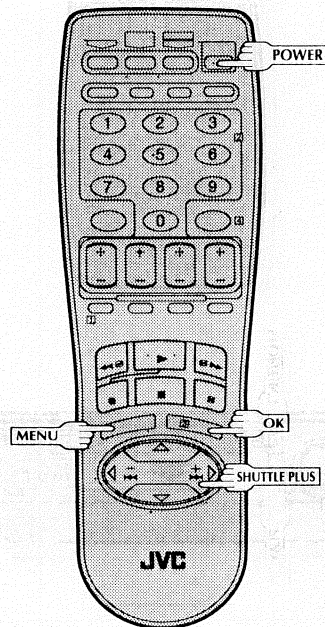
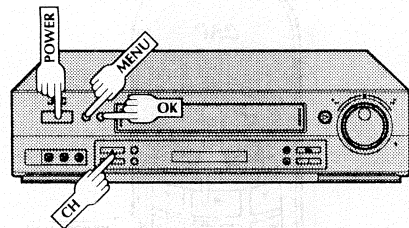
NOTE:

When connecting your DBS receiver refer to its instruction manual.

4 CONNECT CONTROLLER TO VCR

Connect to the CABLE BOX connector on your VCR.

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



Set DBS Receiver Output Channel & DBS Receiver Brand

1 TURN ON DBS RECEIVER

Select a channel other than channel 55, 100 or 205 on your DBS receiver.

2 TURN ON THE VCR

Press **POWER**.

- Set the VCR to the channel (3 or 4 or F-1 or L-1) on which the signals from the DBS receiver are received.

3 ACCESS MAIN MENU SCREEN

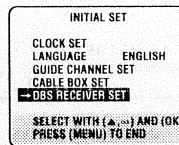
Press **MENU**.

4 ACCESS INITIAL SET SCREEN

Press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **SHUTTLE PLUS** ▶.

5 ACCESS DBS RECEIVER SET SCREEN

Press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "DBS RECEIVER SET", then press **OK** or **SHUTTLE PLUS** ▶.



6 SELECT DBS RECEIVER OUTPUT CHANNEL

Your selection depends on how your DBS receiver is connected to your VCR.

If your DBS receiver is connected to your VCR using an RF connection...

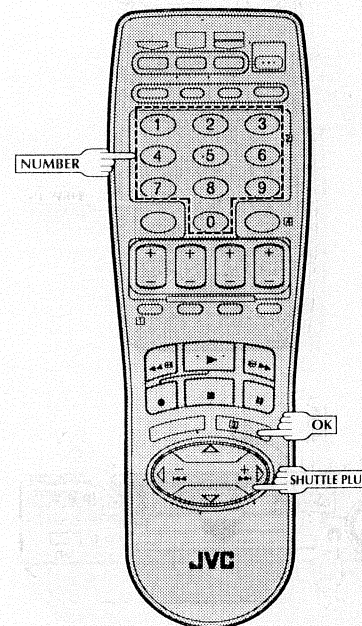
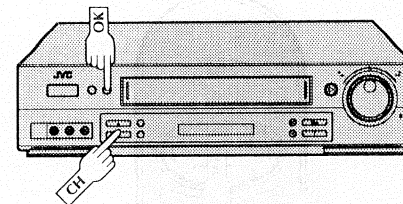
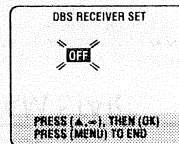
... press **CH** ▲ or **SHUTTLE PLUS** ▲ until the channel number representing the DBS receiver's output (CH3 - CH4) appears on the screen.

If your DBS receiver is connected to your VCR's FRONT AUDIO/VIDEO IN connectors...

... press **CH** ▲ or **SHUTTLE PLUS** ▲ until "ON F-1 (FRONT)" appears on the screen.

If your DBS receiver is connected to your VCR's REAR AUDIO/VIDEO IN connectors...

... press **CH** ▲ or **SHUTTLE PLUS** ▲ until "ON L-1 (REAR)" appears on the screen.

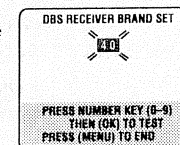


ACCESS DBS RECEIVER BRAND SET SCREEN

Press **OK**.

8 SET DBS RECEIVER BRAND

Press the appropriate **NUMBER** keys to enter the DBS Receiver Code from the following list, then press **OK**.



BRAND	CODE
JVC (DISH Network)	51
ECHOSTAR (DISH Network)	51
PRIMESTAR	50
SONY (DSS)	41
RCA (DSS)	40

- After **OK** is pressed, the program currently received through the DBS receiver will appear for about 10 seconds.
- If the DBS receiver's channel changes to the channel listed below for your brand of DBS receiver, setting is complete. Press **OK** and "DBS RECEIVER CONTROL IS ON" appears on the screen for about 5 seconds, then it returns to the normal screen.

JVC → 100
ECHOSTAR → 100
PRIMESTAR → 55
SONY → 205
RCA → 205

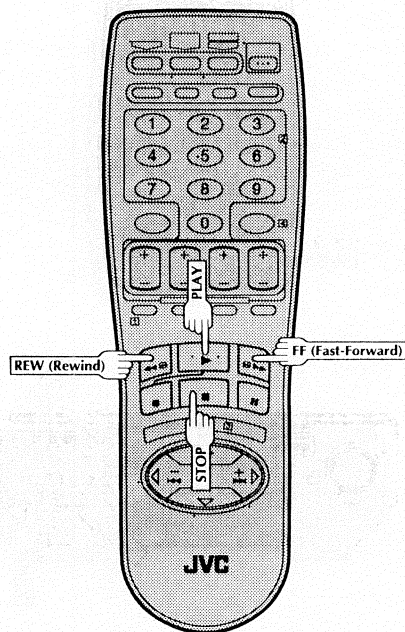
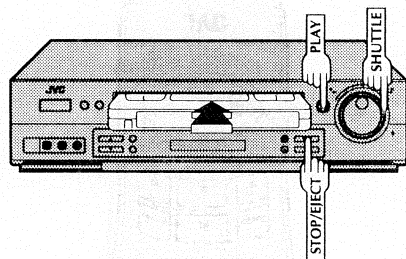
- If the DBS receiver's channel does not change as shown above, press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "NO", then press **OK**. Re-enter the correct code.

NOTES:

- It is possible that the Controller will not work with all types of DBS receiver.
- If your DBS receiver doesn't respond to the code, you can't use the Controller to change satellite channels. In this case, make sure to leave the DBS receiver turned on and tuned to the proper channel before the scheduled start of timer recording.
- The VCR can only change the satellite channel through the Controller during timer recording.
- If your DBS receiver is one that can't be operated with a remote control (because it has no remote sensor), you can't use the Controller to change its channels. Make sure to leave the DBS receiver turned on and tuned to the proper channel before the scheduled start of timer recording.
- For customers in U.S.A.:** If you are unable to set the Controller, please contact JVC toll free at 1-800-252-5722.

Simple Playback

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



1 LOAD A CASSETTE

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is pointing towards the VCR. Don't apply too much pressure when inserting.

- The VCR's power comes on automatically.
- The counter is automatically reset to "0:00:00".
- If the cassette's record safety tab has been removed, playback begins automatically.

2 FIND PROGRAM START POINT

If the tape is advanced past the start point, press **REW** or turn the **SHUTTLE** ring to the left and release it. To go forward, press **FF** or turn the **SHUTTLE** ring to the right and release it.

3 START PLAYBACK

Press **PLAY**. "VIDEO CALIBRATION" appears on the screen (when VIDEO CALIBRATION is set to "ON" □ pg. 32).

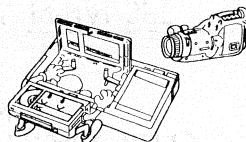
4 STOP PLAYBACK

Press **STOP** or **STOP/EJECT**. Then press **STOP/EJECT** to remove the cassette.

Usable cassettes

Full-Size VHS
T-30 (ST-30**)
T-60 (ST-60**)
T-90
T-120 (ST-120**)
T-160 (ST-160**)
ST-210**

Compact VHS*
TC-20 (ST-C20**)
TC-30 (ST-C30**)
TC-40 (ST-C40**)

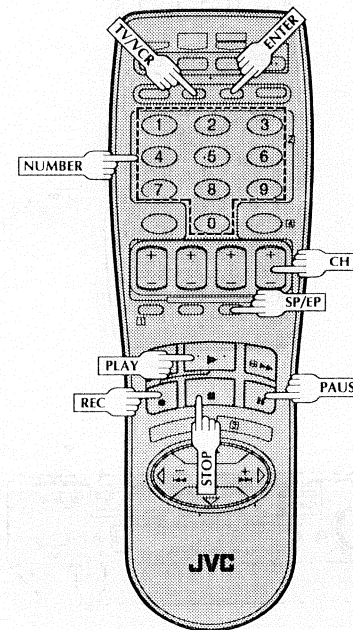
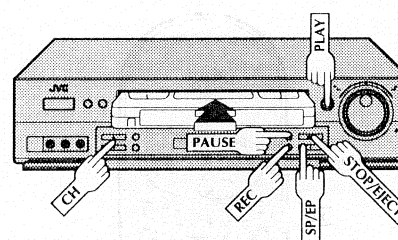


* Compact VHS camcorder recordings can be played on this video recorder. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.

** This VCR can record on regular VHS and Super VHS cassettes. While only VHS signals can be recorded on regular VHS cassettes, both VHS and Super VHS signals can be recorded and played back using Super VHS cassettes.

Simple Recording

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



1 LOAD A CASSETTE

Make sure the record safety tab is intact. If not, cover the hole with adhesive tape before inserting the cassette.

2 SELECT RECORDING CHANNEL

Press **CH**▲∞ (+/-). Or press the appropriate **NUMBER** keys, then press **ENTER**. (The channel changes after a few seconds whether you press **ENTER** or not.)

- If you use the RF connection, by pressing the **TV/VCR** button, select VCR mode to view the program to be recorded.

3 SET TAPE SPEED

Press **SP/EP** to set the recording speed.

4 START RECORDING

Press and hold **REC** and press **PLAY** on the remote control, or press **REC** on the VCR's front panel.

Video Calibration takes place at the beginning of both the first SP and the first EP recording after inserting the cassette (when Video Calibration is set to "ON", □ pg. 32).

5 PAUSE/RESUME RECORDING

Press **PAUSE**. Press **PLAY** to resume recording.

- During record pause, you can change the recording channel by using the **CH**▲∞ (+/-) buttons or **NUMBER** keys.

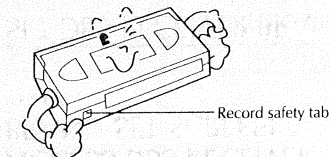
Video Calibration will not take place if the tape speed is changed while in record pause mode.

6 STOP RECORDING

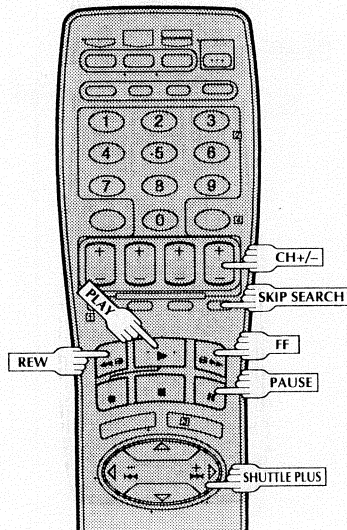
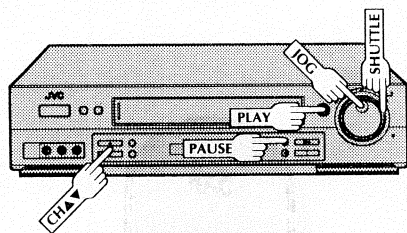
Press **STOP** or **STOP/EJECT**. Then press **STOP/EJECT** to remove the cassette.

Accidental erasure prevention

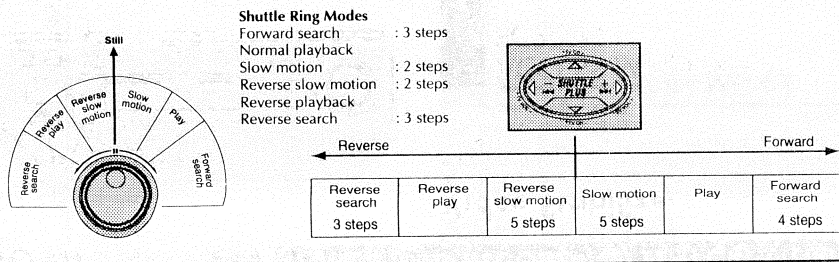
- To prevent accidental recording on a recorded cassette, remove its record safety tab. To record on it later, cover the hole with adhesive tape.



Playback Features



NOTE: Refer to the following for the operations described above.



Still Picture/Frame-By-Frame Playback

1 PAUSE DURING PLAYBACK

Press **PAUSE**. If there is vertical jitter, use the **CH ▲ (+)** or **∞ (-)** button to correct the picture.

2 ACTIVATE FRAME-BY-FRAME PLAYBACK

Turn the **JOG** dial to the right for forward frame-by-frame playback, or to the left for reverse frame-by-frame playback.

OR

Press **PAUSE** repeatedly to advance one frame at a time.

OR

Press **SHUTTLE PLUS ►►** repeatedly for forward frame-by-frame playback or **SHUTTLE PLUS ◄◄** repeatedly for reverse frame-by-frame playback.

To resume normal playback, press **PLAY**.

Slow Motion/Reverse Slow Motion

1 ACTIVATE SLOW-MOTION PLAYBACK

For hands-free slow-motion, press and release **SHUTTLE PLUS ◄◄** during playback to decrease speed in the forward direction. Continue to press and release **SHUTTLE PLUS ◄◄** to select the reverse slow motion, reverse play and reverse search modes.

OR

During playback or still picture, turn the **SHUTTLE** ring to the right for forward slow motion, or to the left for reverse slow motion.

OR

During still picture, press and hold **SHUTTLE PLUS ►►** for forward slow motion, or press and hold **SHUTTLE PLUS ◄◄** for reverse slow motion. Release to return to still picture.

To resume normal playback, press **PLAY**.

Variable-Speed Search/Reverse Motion Playback

1 ACTIVATE VARIABLE-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring to the right for forward variable-speed search, or to the left for reverse variable-speed search.

OR

During playback, repeatedly press and release **SHUTTLE PLUS ◄◄** or **►►** to select the search speed.

• To increase the speed in the forward direction, press and release **►►** repeatedly to select the various forward search modes.

• To decrease the speed in the forward direction, press and release **◄◄**.

• To play in reverse slow motion, and in reverse play mode, continue to press **◄◄** repeatedly after selecting all the forward slow motion modes.

To resume normal playback, press **PLAY**.

Skip Search

1 SKIP OVER UNWANTED SECTIONS

Press **SKIP SEARCH** 1 to 4 times during playback. Each press initiates a 30-second period of fast-motion playback. Normal playback resumes automatically.

NOTES:

- To return to normal playback during a Skip Search, press **PLAY**.
- When **SKIP SEARCH** is pressed during playback of a prerecorded tape or a tape with the safety tab removed, the Skip Menu is displayed (pg. 30). When this menu is displayed, select "SKIP SEARCH" to select the skip search function.

Index Search

Index codes are placed on the tape at the start of each recording. You can find and automatically play back from the start of any recording using the Index Search function.

1 START SEARCH

While the tape is stopped, press **SHUTTLE PLUS ◄◄** or **►►** (< or >).

2 ACCESS DISTANT CODE

To access a recording 2-9 index codes away, press **SHUTTLE PLUS ◄◄** or **►►** (< or >) repeatedly until the correct number is displayed on screen (only if "SUPERIMPOSE" is set to "ON" (pg. 28). Playback begins automatically when the desired recording is located.

- If necessary press **REW** or **FF** when play starts to search visually to find the very beginning of the desired program.

NOTE:

An index code is not placed on the tape when recording is paused and then resumed.

High-Speed Search

1 ACTIVATE HIGH-SPEED SEARCH

During playback or still, turn the **SHUTTLE** ring all the way to the right for forward high-speed search, or to the left for reverse high-speed search. By releasing **SHUTTLE** still picture playback is selected.

- For forward high-speed search, turn the **SHUTTLE** ring all the way to the right and release it within 1 second.
- For reverse high-speed search, turn the **SHUTTLE** ring all the way to the left and release it within 1 second.

OR

During playback or still, press **FF** for forward high-speed search, or **REW** for reverse high-speed search.

To resume normal playback, press **PLAY**.

NOTE:

For short searches, during playback or still, press and hold **FF** or **REW** for over 2 seconds. When released, normal playback resumes.

Manual Tracking

Once playback begins, the VCR's automatic tracking function is engaged. If tracking noise appears in the picture, you can override this and make the adjustment manually.

1 ENGAGE MANUAL TRACKING MODE

During playback, press the **CH▲** and **∞** buttons on the VCR's front panel simultaneously to cancel the automatic tracking mode and enable manual tracking adjust.

2 ADJUST MANUAL TRACKING

Press **CH▲** (+) or **∞** (-) on the VCR's front panel or remote. Press briefly for fine adjust, or press and hold for coarse adjust. Watch the screen and continue adjusting until optimum picture and sound quality are achieved.

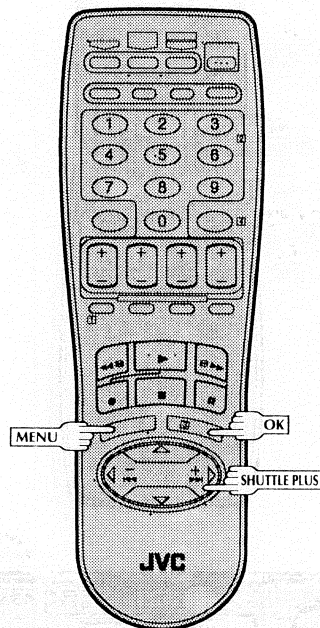
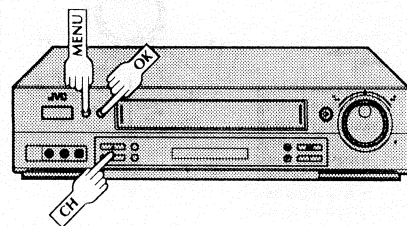
3 RE-ENGAGE AUTOMATIC TRACKING

Press the **CH▲** and **∞** buttons on the VCR's front panel simultaneously.

- When automatic tracking is re-engaged, Video Calibration is automatically activated.

NOTES:

- To obtain a noiseless still picture it may be necessary to adjust tracking in slow playback and then engage Pause.
- Manual tracking is possible during hands-free slow-motion. During hands-free slow-motion playback, simply press **CH▲** (+) or **∞** (-) on the VCR's front panel or remote to adjust tracking.



Video Stabilizer

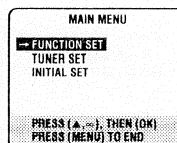
By activating the Video Stabilizer you can correct vertical vibrations in the picture when playing back unstable EP recordings that were made on another VCR. When this function is set to "ON", vertical vibration will be automatically corrected. *The default setting is "OFF".

1 ACCESS MAIN MENU SCREEN

Press MENU.

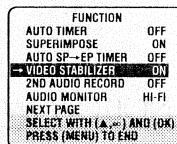
2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸.



3 ACTIVATE VIDEO STABILIZER

Move the highlight bar (arrow) to "VIDEO STABILIZER" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸ to set to "ON".

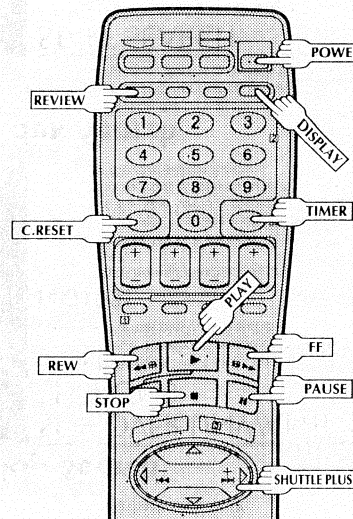
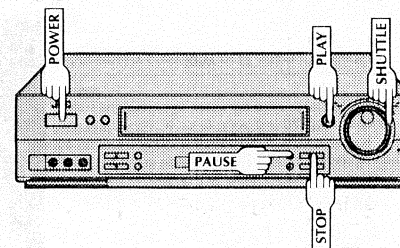


4 RETURN TO NORMAL SCREEN

Press MENU.

NOTES:

- Regardless of the setting, this function has no effect with SP recordings, during recording and during special-effects playback.
- When you finish viewing the tape, be sure to set it back to "OFF".



Instant ReView

At the press of a button, you can power up your VCR, rewind the tape and begin viewing the most recently recorded or timer-recorded program.

1 ACTIVATE INSTANT REVIEW

After ensuring that the Timer mode is disengaged, press REVIEW.

- The power comes on and the VCR rewinds to the index code indicating the start of the last timer-recorded program, then begins playback automatically.
- You can access a program 2-9 index codes away from the current position on the tape. If, for example, you have 5 programs recorded and you want to watch the third one, press REVIEW three times.
- If necessary press REW or FF when play starts to search visually to find the very beginning of the desired program.
- If the tape is already rewind when REVIEW is pressed, it will play the tape from the beginning. It will not fast forward to an index code.
- The Instant Review function will also operate if the VCR's power is on.

Repeat Playback

START REPEAT

Press and hold PLAY (until "▶" blinks on the front display panel) during playback, then release.



- The entire tape is played back 50 times.

STOP REPEAT

To stop, press STOP at any time.

NOTE:

Pressing PLAY, REW, FF, PAUSE or SHUTTLE PLUS ◀ or ▶ also stops Repeat Playback.

Counter Reset

1 RESET COUNTER TO ZERO

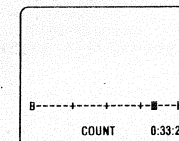
Press C.RESET.

NOTE:

By pressing the DISPLAY button, you can change the display to show the counter reading, channel number or clock time. (Channel number is not displayed during playback.)

Tape Position Indicator

The Tape position indicator appears on screen when, from the stop mode, you press FF, REW, or use the SHUTTLE ring, or perform an Index Search or Instant ReView. The position of "■" in relation to "B" (Beginning) or "E" (End) shows you where you are on the tape.



NOTES:

- "SUPERIMPOSE" must be set to "ON", or the indicator will not appear (pg. 28).
- It may take a few seconds for the Tape Position Indicator to be displayed.

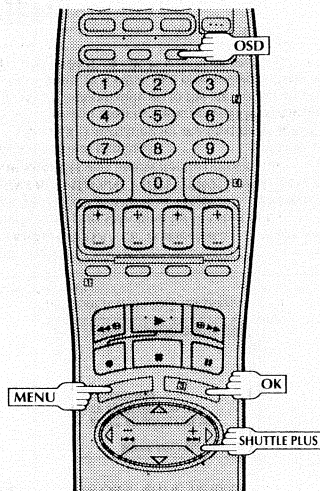
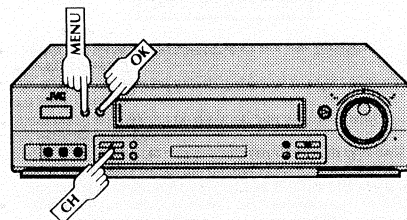
Next-Function Memory

The Next Function Memory "tells" the VCR what to do after rewinding. Before continuing, ensure that the VCR is in stop mode.

- a- For Automatic Start Of Playback After Tape Rewind . . . press REW, then press PLAY within 2 seconds.
- b- For Automatic Power Off After Tape Rewind . . . press REW, then press POWER within 2 seconds.
- c- For Automatic Timer Standby After Tape Rewind . . . press REW, then press TIMER within 2 seconds.

NOTE:

It is not possible to select the Automatic Timer functions if the cassette's record safety tab is removed.



To recall an indication

- 1 Press OSD.
 - All indications corresponding to the current status are displayed for 5 seconds. After that, the counter information and RECORD/PAUSE if in the Record Pause mode, are left displayed on the screen.
- 2 Press OSD again to clear the display.

The superimposed indication on the TV screen tells you what the VCR is doing.

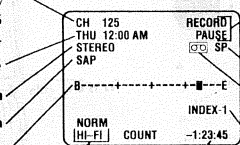
Tuned-in channel or AUX(iliary) mode
When the channel is changed, the new channel is displayed on the screen for 5 seconds.

Clock time

Stereo program indication

Second Audio Program indication

Tape position indicator



Audio mode indications

Counter reading
Switchable to the tape remaining time display

Operation mode

When the operation mode is changed, the new mode is displayed — RECORD (5 sec.), PLAY (5 sec.), FF/REW (5 sec. when engaged from Stop mode), RECORD PAUSE (for as long as Pause is engaged), and ITR *: ** (5 sec.).

Tape speed indication

"Cassette Loaded" mark

When a cassette is loaded, the mark is displayed for 5 seconds. It blinks when the VCR's EJECT button is pushed.

INDEX indication

Superimpose

This function, switchable between ON and OFF, determines whether or not operational indicators will appear on screen.

ACCESS MAIN MENU SCREEN

Press MENU.

ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸.

SELECT SUPERIMPOSE SET MODE

Move the highlight bar (arrow) to "SUPERIMPOSE" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸ to select the desired mode:

- a- Select "ON" if you want the superimposed operational indications on the TV screen.
- b- Select "OFF" if you do not want the superimposed operational indications on the screen.

FUNCTION	OFF
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲) AND (OK)	
PRESS (MENU) TO END	

RETURN TO NORMAL SCREEN

Press MENU.

NOTES:

- If you engage the Record Pause mode, RECORD/PAUSE is displayed regardless of the Superimpose mode setting.
- If you select a channel on which no signal is received, the channel number is displayed regardless of the Superimpose mode setting.

Select The Soundtrack

Your VCR can record two soundtracks simultaneously (Normal and Hi-Fi) and play back the selected one, or both together. Or, when viewing a pre-recorded tape that contains two separate Hi-Fi audio programs, you can choose to listen to either one by selecting either "Hi-Fi L" or "Hi-Fi R" in step 3.

ACCESS MAIN MENU SCREEN

Press MENU.

ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸.

SELECT AUDIO MONITOR SET MODE

Move the highlight bar (arrow) to "AUDIO MONITOR" by pressing CH ▲ or SHUTTLE PLUS ▲, then press OK or SHUTTLE PLUS ▸ to select the desired mode:

- a- Hi-Fi
- b- Hi-Fi L
- c- Hi-Fi R
- d- Normal
- e- Mix

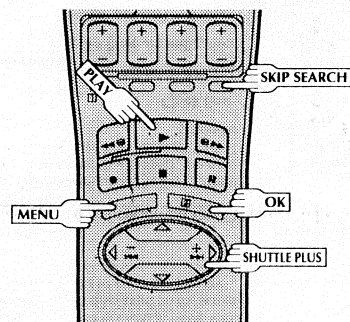
FUNCTION	OFF
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲) AND (OK)	
PRESS (MENU) TO END	

RETURN TO NORMAL SCREEN

Press MENU.

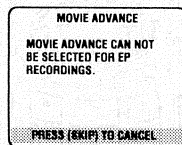
NOTES:

- If the tape being played back has no Hi-Fi soundtrack, the Normal soundtrack will be heard no matter what choice you make in step 3.
- If RF connection is used for TV, even if Hi-Fi audio monitor is selected the sound will be mono and will be reproduced in both loudspeakers.



ATTENTION

Movie Advance and Movie Advance (Preview) works only on prerecorded cassettes that have been recorded in the SP mode, and have no safety tab. If the VCR detects the EP mode after you press **OK** in step 4, the following screen appears.



Skip Search will work for prerecorded EP tapes.

When "MOVIE ADVANCE" is selected...

- If you want to stop searching for the start of the movie, simply press **SKIP SEARCH** or **STOP**.

When "MOVIE ADVANCE (PREVIEW)" is selected...

- If **SKIP SEARCH** was inadvertently pressed, press it again to resume normal playback.
- While the VCR is searching for the next preview, if you see a preview you wish to view, press **SKIP SEARCH** and the VCR will immediately go to the start of that preview.
- If the VCR starts to reverse to a preview you do not wish to view, press **SKIP SEARCH** to initiate searching to the next preview.

NOTES:

- Normally there is a period of black and no audio at the beginning and end of previews. The Movie Advance feature detects those parts where the picture fades to black and the audio fades to silence, and initiates fast-motion to skip over the detected previews.
- Some previews may not be detected and Movie Advance may not work properly.
- The setting you selected in step 3 remains in effect until the cassette is ejected.
- "MOVIE ADVANCE (PREVIEW)" does not use TimeScan when searching for the next preview.

Patents Pending

Movie Advance

This feature helps you locate certain parts of prerecorded movies (rented or purchased), with no safety tab, in two ways.

- You can go to the beginning of the movie, skipping over all previews.
- You can fast-motion the tape to the beginning of the next preview, so you can skip over previews one by one.

LOAD A CASSETTE

Insert a cassette that has a prerecorded movie (rented or purchased), with no safety tab, into the VCR. Playback begins automatically.

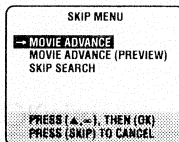
ACCESS SKIP MENU SCREEN

Press **SKIP SEARCH**.

SELECT MODE

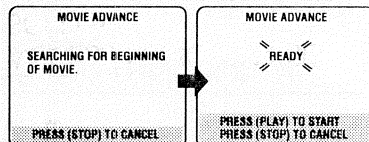
Press **CH▲∞** or **SHUTTLE PLUS** $\Delta \nabla$ to move the highlight bar (arrow) to your choice.

- Select "MOVIE ADVANCE" if you want to advance directly to the beginning of the movie.
- Select "MOVIE ADVANCE (PREVIEW)" if you want to advance to the next preview.
- Select "SKIP SEARCH" if you do not want to perform Movie Advance, then press **OK** to go back to the normal screen. Pressing **SKIP SEARCH** activates the Skip Search function (pg. 25).

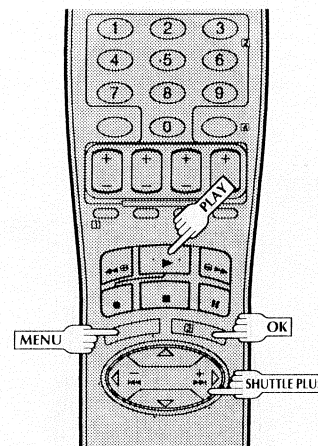
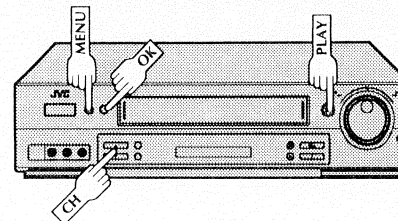


PERFORM MOVIE ADVANCE

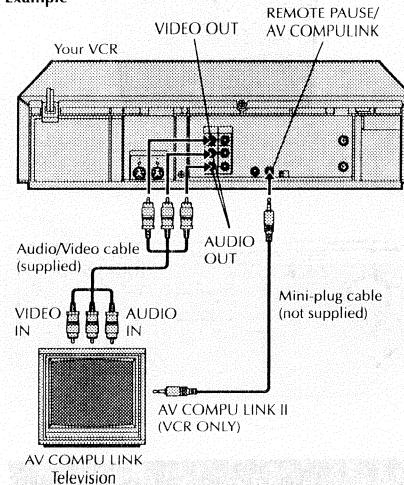
- If you selected "MOVIE ADVANCE" in step 3 and press **OK**, the following screen will appear with a blue background. The VCR will rewind the beginning of the tape, then will fast-motion to the beginning of the movie. "READY" will appear and blink when the beginning of the movie is detected and the Stop mode will be engaged. Press **PLAY** to view the movie.



- If you selected "MOVIE ADVANCE (PREVIEW)" in step 3 and press **OK**, the VCR will fast-motion to the beginning of the next preview and normal playback will resume when it is detected. Each press of **SKIP SEARCH** fast-motions to the beginning of the next preview, thereby skipping over one preview each time. The tape will forward-search a little past the start of the next preview, then will reverse-search to the beginning of the preview and start playback.



Example



AV COMPU LINK Playback

Your VCR is compatible with JVC's AV COMPU LINK components, including amplifiers (or receivers) and televisions. AV COMPU LINK provides one touch control of the audio and video components that are linked via their AV COMPU LINK connectors.

For example: simply load a cassette in the VCR and press **PLAY** and the AV COMPU LINK components automatically power on, the TV's AV mode is selected and the VCR goes into play mode. (PLAY need not be pressed if the cassette's record safety tab is removed.)

MAKE CONNECTION

Connect your VCR to an AV COMPU LINK component as shown in the illustration in the left column.

- The mini-plug cable is a mono 3.5 mm mini-plug to mono 3.5 mm mini-plug connector.

ACCESS MAIN MENU SCREEN

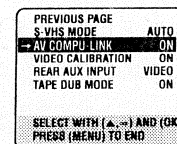
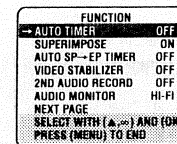
Press **MENU**.

ACCESS FUNCTION SET SCREEN

Press **CH▲∞** or **SHUTTLE PLUS** $\Delta \nabla$ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **SHUTTLE PLUS** $\triangleright$.

ENABLE AV COMPU LINK PLAYBACK

Press **CH▲∞** or **SHUTTLE PLUS** $\Delta \nabla$ to move the highlight bar (arrow) to "AV COMPU-LINK", then press **OK** or **SHUTTLE PLUS** $\triangleright$ to set to "ON".



RETURN TO NORMAL SCREEN

Press **MENU**.

PERFORM AV COMPU LINK PLAYBACK

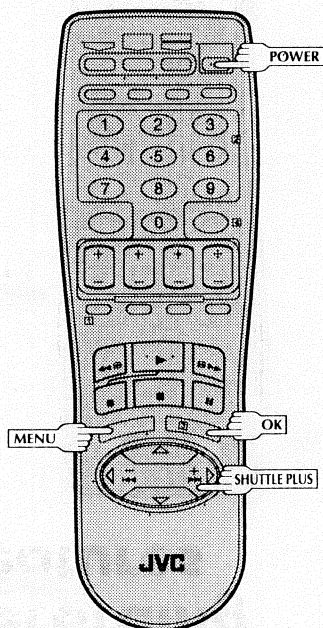
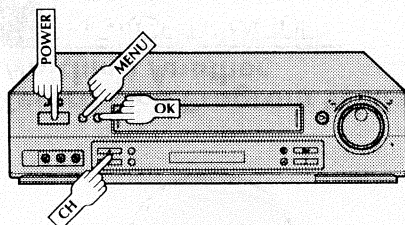
Simply insert a cassette and press **PLAY** (if the cassette's record safety tab has been removed, playback begins automatically). Linked components are turned on, and the TV set to its AV mode, automatically!

NOTE:

Connection varies depending on the type of JVC TV you have. Please refer to the TV's instruction manual when making this connection.

Active Video Calibration

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



Active Video Calibration checks the condition of the tape during recording and playback, and compensates for poor reproduction to provide the best quality recording and playback pictures. *The default setting is "ON".

Preparation

1 TURN ON THE VCR

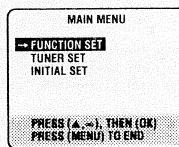
Press **POWER**.

2 ACCESS MAIN MENU SCREEN

Press **MENU**.

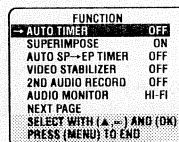
3 ACCESS FUNCTION SET SCREEN

Press **CH** Δ or **SHUTTLE PLUS** Δ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **SHUTTLE PLUS** $\triangleright$.



4 SELECT VIDEO CALIBRATION MODE

Press **CH** Δ or **SHUTTLE PLUS** Δ to move the highlight bar (arrow) to "VIDEO CALIBRATION", then press **OK** or **SHUTTLE PLUS** $\triangleright$ to set to "ON" or "OFF".

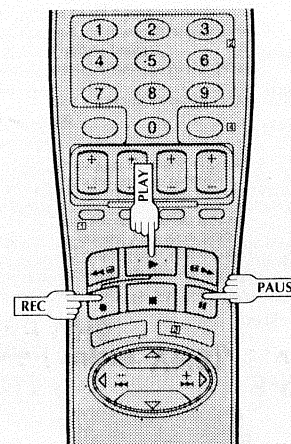
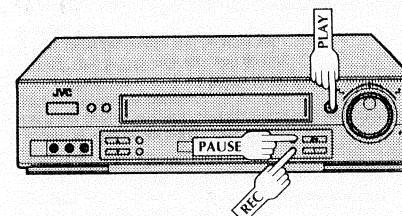


NOTE:

When recording or when playing back tapes recorded on this VCR set the Video Calibration to "ON".

5 RETURN TO NORMAL SCREEN

Press **MENU**.



Playback

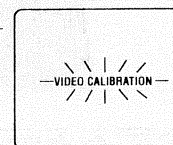
The VCR assesses the quality of the tape once you start playback.

Perform steps 1 and 2 on page 22 ("Simple Playback") before continuing.

1 START PLAYBACK

Press **PLAY**.

- The VCR adjusts the playback picture quality based on the quality of the tape in use.



NOTES:

- When using rental tapes, or tapes recorded on other VCRs, set "VIDEO CALIBRATION" in step 4 of the Preparation procedure to either "ON" or "OFF" as desired to give the best picture (pg. 32).
- The Video Calibration screen only appears at the beginning of automatic tracking. Even though the screen doesn't appear after that, the Video calibration function is operative.
- To display the Video Calibration screen, "SUPERIMPOSE" must be set to "ON" or the Video Calibration screen will not appear (pg. 28).

Recording

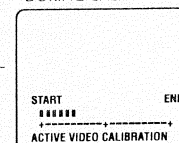
Perform steps 1 – 3 on page 23 ("Simple Recording") before continuing.

1 START RECORDING

Press and hold **REC** and press **PLAY** on the remote control, or press **REC** on the VCR's front panel.

- The VCR takes about 7 seconds to assess the quality of the tape in use, then recording begins with the picture level optimized.

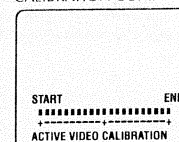
DURING CALIBRATION



NOTES:

- Calibration occurs immediately prior to both the first SP and the first EP recording after inserting the cassette. It does not take place during recording.
- In the case of timer recording, calibration takes place for both SP and EP before the first timer recording after inserting the cassette (regardless of the tape speed selected for that recording).
- Once the cassette is ejected, the calibration data is canceled. The next time the cassette is used for recording, calibration is re-performed.
- While Video Calibration is operative, the **PAUSE** button will not function.
- To display the Video Calibration screen, "SUPERIMPOSE" must be set to "ON" or the Video Calibration screen will not appear (pg. 28).

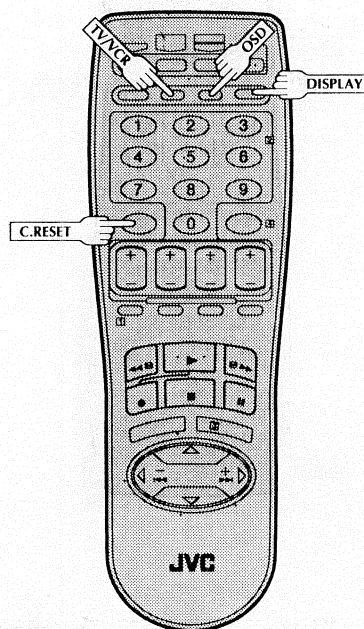
CALIBRATION COMPLETE



ATTENTION

- As calibration takes place before recording actually starts, there is a delay of about 7 seconds after **REC** and **PLAY** on the remote, or **REC** on the VCR's front panel, are pressed. To make sure you record the desired scene or program completely, first perform the following steps:
 - Press and hold **PAUSE**, and press **REC** to engage the RECORD PAUSE mode.
 - The VCR then automatically checks the condition of the tape and, after about 7 seconds, re-enters RECORD PAUSE.
 - Press **PLAY** to start recording.
- If you want to bypass Video Calibration and start recording right away, set "VIDEO CALIBRATION" to "OFF" in step 4 of the Preparation procedure (pg. 32).

Recording Features



Record One Program While Watching Another

1 ENGAGE TV MODE

During recording...

- Press **TV/VCR**. The VCR's VCR indicator goes out. (If you are using the RF connection (pg. 6) to view the output from your VCR, the TV broadcast being recorded disappears.)
- If you are using the AV connection (pg. 6) to view the output from your VCR, change the TV's input mode from AV to TV.

2 SELECT CHANNEL FOR VIEWING

Use the TV's channel selector to set the channel you want to watch.

Display Elapsed Recording Time

1 RESET COUNTER TO ZERO

Before recording starts, press **C.RESET**. The counter resets to zero and displays the exact elapsed time as the tape runs.

2 DISPLAY ELAPSED TIME ON SCREEN

During recording, press **OSD** at any time to see the elapsed time. All indications corresponding to the current status of the VCR are displayed for 5 seconds. The counter display remains on the screen indicating the elapsed time. Press **OSD** again to remove the display.

- Make sure "SUPERIMPOSE" is set to "ON" (pg. 28).
- The indications are not recorded.
- Press **DISPLAY** to change to the COUNT display if "REMAIN" is displayed.

Display Tape Remaining Time

1 DISPLAY COUNTER INFORMATION

Press **OSD**. All indications corresponding to the VCR's current status are displayed for 5 seconds. The counter display remains on the screen indicating the elapsed time.

2 DISPLAY TAPE REMAINING TIME

Press **DISPLAY** until "REMAIN" appears on screen. The approximate tape remaining time appears on the TV screen and also on the VCR display panel with a "REMAIN" indicator.

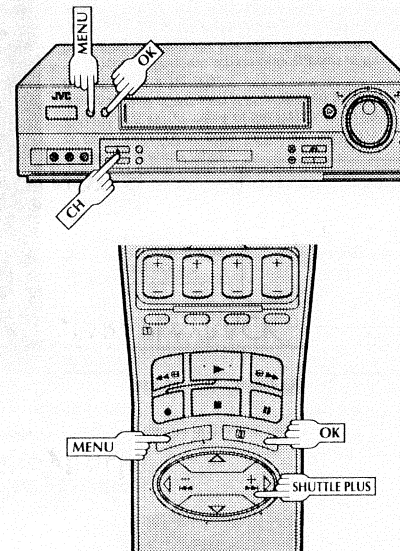
- The tape remaining time is calculated based on the tape speed (SP or EP) being used. The indicated remaining time is only an estimate.
- Press **DISPLAY** to change the on-screen display from REMAIN to COUNT and vice versa; and to show counter reading, channel number, clock time or tape remaining time on the front display panel. Then channel number will not be displayed when the VCR is playing a tape.

3 EXIT THE DISPLAY

Press **OSD** again.

NOTES:

- "SUPERIMPOSE" must be set to "ON", or the on-screen display will not appear (pg. 28).
- Near the beginning of the tape, the tape remaining estimate may be inaccurate. However, the estimate becomes more accurate as the tape comes closer to the end.
- Depending on the type of tape used, the tape remaining time reading may not appear right away, or may not be correct. "REMAIN" may sometimes appear, or the display may blink on occasion.
- The tape remaining time indication is not accurate when using VHS-C tapes with VHS-C adapter.



S-VHS (Super VHS), S-VHS ET and VHS

Your VCR can record in S-VHS, S-VHS ET or VHS.

S-VHS allows you to make high quality video recordings with a horizontal resolution of 400 lines. This compares with the 240 lines of resolution of normal VHS recordings. To achieve the highest quality picture we recommend that you record in S-VHS mode.

By using S-VHS ET it is possible to record and play back with S-VHS picture quality on VHS cassettes with this VCR. For details, refer to page 36.

To record in S-VHS;

- perform the steps 1 – 4 below to set the "S-VHS MODE" to "ON".
- then, insert a cassette marked "S-VHS", the S-VHS indicator will light on the display panel.

The S-VHS recording mode will be automatically selected.

To record in S-VHS ET on a VHS cassette;

☞ "Super VHS ET" on page 36.

To record in VHS;

- insert a cassette marked "VHS".
- The VHS recording mode will be automatically selected regardless of the S-VHS mode setting.

To record in VHS on an S-VHS cassette;

- insert the cassette marked "S-VHS", the S-VHS indicator will light on the display panel.
 - then, perform the steps 1 – 4 below to set the "S-VHS MODE" to "OFF"; the S-VHS indicator will go out.
- The VHS recording mode will be selected.

NOTE:

Tapes recorded in S-VHS or S-VHS ET mode can not be played back successfully on normal VHS VCRs.

ACCESS MAIN MENU SCREEN

Press **MENU**.

ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH** or **SHUTTLE PLUS**, then press **OK** or **SHUTTLE PLUS**.

SELECT S-VHS MODE

Move the highlight bar (arrow) to "S-VHS MODE" by pressing **CH** or **SHUTTLE PLUS**, then press **OK** or **SHUTTLE PLUS** to set to "ON" or "OFF".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▼) AND (OK) PRESS (MENU) TO END	

PREVIOUS PAGE	
S-VHS MODE	ON
AV COMPU-LINK	ON
VIDEO CALIBRATION	ON
REAR AUX INPUT	VIDEO
TAPE DUB MODE	ON
SELECT WITH (▲, ▼) AND (OK) PRESS (MENU) TO END	

RETURN TO NORMAL SCREEN

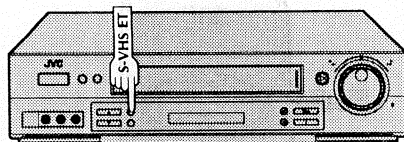
Press **MENU**.

NOTE:

When playing back a tape that has been recorded in S-VHS or S-VHS ET, the S-VHS indicator lights on the display panel regardless of the "S-VHS MODE" setting.

Super VHS ET

Your VCR is equipped with Super VHS ET that makes it possible to record with S-VHS picture quality on VHS cassettes.



NOTES:

- You cannot activate the S-VHS ET function...
 - ...while recording is in progress.
 - ...while timer-recording (incl. Instant Timer Recording (pg. 46) and Automatic Satellite Program Recording (pg. 47)) is in progress.
 - ...while Video Calibration (pg. 32) is in progress.
 - ...when the VCR's power is off.
- S-VHS ET does not work with S-VHS tapes.

S-VHS ET

This facility allows recording with S-VHS picture quality on VHS cassettes. You can play back those cassettes recorded in S-VHS ET on a VCR equipped with S-VHS ET.

NOTES:

- To obtain the highest quality recording and playback pictures over a longer period on this model, S-VHS recording on S-VHS tape is recommended.
- You can play back S-VHS ET recordings not only on this VCR but also on another VHS VCR equipped with S-VHS ET.
 - * It is recommended to specifically label S-VHS ET recordings so you can easily distinguish them from regular VHS recordings.
- S-VHS ET recordings can also be played back on an S-VHS VCR or a VHS VCR equipped with SQPB (S-VHS QUASI PLAYBACK) function. However, there may be cases where S-VHS ET playback is not possible on a particular VCR.
- Frequent still, frame-by-frame and slow-motion playback may damage the tape and cause picture degradation.
- With some tapes, better picture quality may not be obtained even with S-VHS ET recording. It is recommended that you do test record beforehand to make sure whether better results can be obtained.
- High Grade tapes are recommended for superior results.
- Make sure that "VIDEO CALIBRATION" is set to "ON" at the Function screen (pg. 32).
- If the playback picture becomes blurred or interrupted, use a cleaning cassette.

SELECT S-VHS ET SET MODE

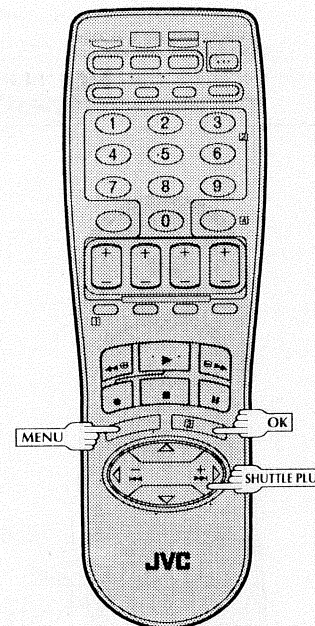
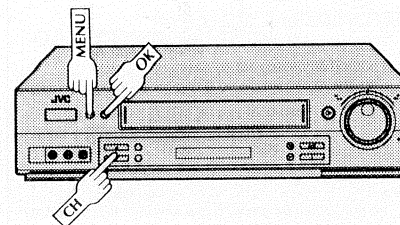
- Press **S-VHS ET**. The current setting appears on the screen for about 5 seconds.

S-VHS ET : OFF

ENGAGE S-VHS ET MODE

- While the current setting is displayed on the screen, press **S-VHS ET** again to set to "ON".

- The "S-VHS" indicator lights on the front display panel.



Stereo And SAP (Second Audio Program)

Your VCR's built-in MTS decoder enables reception of Multi-channel TV Sound broadcasts.

When the channel is changed on the VCR ...

- The "STEREO" indication appears on the screen for about 5 seconds if the program is a stereo broadcast.
- The "SAP" indication appears on the screen for about 5 seconds if the program is a SAP broadcast.
- Both indications appear when a stereo program is accompanied by SAP audio.

To Record Stereo Programs ...

... simply follow the basic recording procedure.

To Listen To Stereo Soundtrack During Recording ...

... set "AUDIO MONITOR" to "HI-FI" at the Function screen (pg. 29).

To Record SAP Programs ...

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▷**.

3 SELECT 2ND AUDIO RECORD SET MODE

Move the highlight bar (arrow) to "2ND AUDIO RECORD" by pressing **CH▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▷** to set to "ON".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
→ 2ND AUDIO RECORD	ON
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▽) AND (OK)	
PRESS (MENU) TO END	

4 RETURN TO NORMAL SCREEN

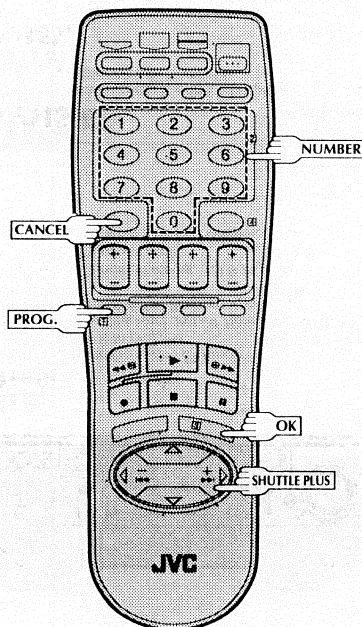
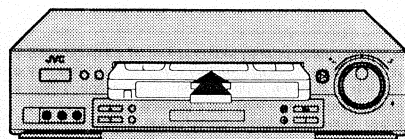
Press **MENU**.

NOTES:

- If a SAP program is received and "2ND AUDIO RECORD" is set to "ON", the SAP audio is recorded on both the Normal and Hi-Fi tracks. The main audio program is not recorded.
- If a non-SAP program is received, the main audio is recorded on both the Hi-Fi and Normal audio tracks.

VCR Plus+ Timer Programming

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



Timer recording allows you to program the VCR to automatically record a program that will be broadcast at some future time. The timer record function can be programmed using VCR Plus+ or Express Timer Programming up to 8 shows as far as a year in advance. (pg. 38 or 42)

The VCR Plus+ timer programming system eliminates the need to input channel, date, start and stop time data when setting the timer record function. Simply key in the PlusCode number for the TV program you wish to record and the VCR's timer will be automatically programmed. (The PlusCodes are the numbers next to the programs in most TV listings.)

LOAD A CASSETTE

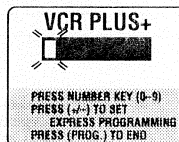
Make sure the record safety tab is present.

- The VCR's power comes on automatically.

ACCESS VCR PLUS+ SCREEN

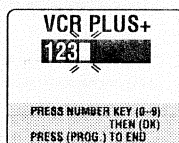
Press **PROG.** on the remote control.

- The clock must be set in order to access the VCR Plus+ screen. If you haven't set the clock, the Main Menu screen appears after an error message is displayed. Refer to page 8 for the Plug & Play procedure or page 11 for the clock setting procedure.



ENTER PLUSCODE NUMBER

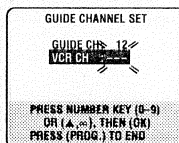
Press the appropriate **NUMBER** keys to enter the PlusCode number printed in the TV listings for the TV program you wish to record and press **OK**.
If the Guide Channel Set screen appears, go to step 4.
If the VCR Plus+ Program screen appears, go to step 5.



- To make corrections, press **CANCEL** and input the correct PlusCode number.

INPUT RECEIVING CHANNEL NUMBER

The Guide Channel Number, which is assigned to the TV or cable station for the PlusCode number that you entered in step 3, will appear automatically on the Guide Channel Set screen. Input the number of the channel on which the broadcast for the PlusCode number is received on the VCR or cable box using the **NUMBER** keys, **CH** Δ ∞ or **SHUTTLE PLUS** Δ ∇ , then press **OK**.



- The Guide Channel Set screen appears only when you input the PlusCode number of a station for which the Guide Channel number has not previously been set.
- If you receive your channels with a cable box and if you have properly set your Controller, "CABLE CH" appears in place of "VCR CH". If not, refer to pages 16 - 18.

CHECK PROGRAM DATA

The PlusCode number you entered and the matching Timer-Recording information is displayed on the Program screen. Check to make sure it's accurate.

PROGRAM 1			
VCR PLUS+ 123456789			
START	8:00PM	STOP	10:00PM
DATE	12/24/98	CH	12 SP
THU			
PRESS (8-9) DAILY, 8-WEEKLY			
STOP +/- STOP TIME, SP/EP			
PRESS (OK) TO END			

- To change the stop time, press **STOP +/-**.
- To timer-record daily or weekly series, press **DAILY** (NUMBER "8") or **WEEKLY** (NUMBER "9"). "DAILY" or "WEEKLY" appears on the Program screen. Pressing the button again makes each corresponding display disappear.
- If you made a mistake, press **CANCEL** to access the VCR Plus+ screen again and input the correct PlusCode number.
- If the PlusCode number you inputted is incorrect, "ERROR" may appear on the screen to advise you of the error. This happens when the PlusCode number is for a program which has already passed. "ERROR" is displayed for about 5 seconds and the VCR Plus+ screen reappears.

SET TAPE SPEED

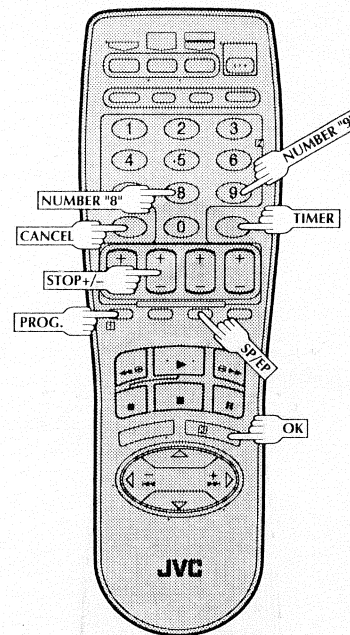
Press **SP/EP**.

RETURN TO NORMAL SCREEN

Press **PROG.** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

ENGAGE TIMER MODE

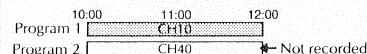
Press **TIMER**. The VCR turns off automatically and "O" is displayed on the display panel.



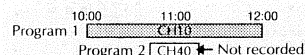
ATTENTION

If there is a conflict in the timer schedule and one program overlaps with another, only the parts shown below in gray will be recorded.

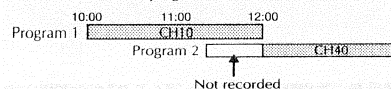
Pattern 1: The program with the lower program number will be recorded.



Pattern 2: The program that is broadcast earlier will be recorded.



Pattern 3: The program that is broadcast earlier will be recorded, followed by the remaining portion of the other program.



IMPORTANT

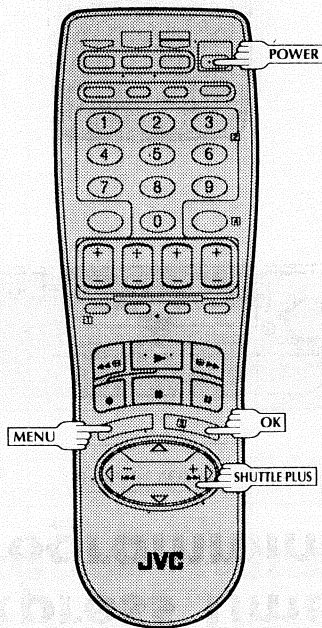
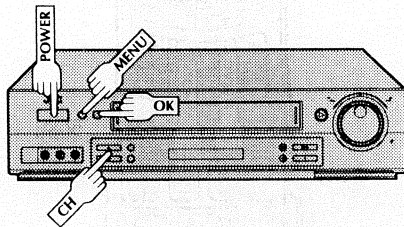
If you have moved to a different area or if a broadcasting station's channel number has been changed, the wrong VCR or CABLE CH number will be displayed on the VCR Plus+ Program screen in step 5. When this happens, set the correct the Guide Channel number for that station. (pg. 40, "VCR Plus+ Setup")

NOTES:

- To disengage the timer before recording starts, press **TIMER** again. Pressing once more re-engages it.
- In case of a power failure after programming, the VCR's memory backup keeps your selections for approximately 10 minutes.
- When timer-recording cable channels received through a Cable Box, be sure to keep the Cable Box set to ON.

VCR Plus+ Setup

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



IMPORTANT

If you have moved to a different area or if a broadcasting station's channel number has been changed, the wrong VCR or CABLE CH number will be displayed on the VCR Plus+ Program screen (see step 5 on page 39). When this happens, perform the following steps to set the correct the Guide Channel number for that station.

To ensure that VCR Plus+ Timer Recording operates correctly it is necessary to set the VCR Plus+ "Guide Channel Set" for each station. Please read the following information carefully.

VCR Plus+ Guide Channel Matching

VCR Plus+ assigns a VCR Plus+ "Guide Channel" to broadcast and cable TV channels. These Guide Channel numbers are also called the VCR Plus+ Channel Codes. Most TV listings have a section, usually a chart, indicating the "Guide Channel" numbers assigned to each station. For accurate VCR Plus+ Programming the VCR Plus+ Guide Channel number for each station should match the channel number on which it is received in your area.

NOTES:

- In many instances the VCR Plus+ Guide Channel numbers for cable and broadcast TV stations **DO NOT** match the channel number on which it is received by your VCR or cable box. Check your TV listing, or contact your cable supplier for details.
- Many broadcast TV stations can be viewed on cable. Check your TV listing, or contact your cable supplier for details.

TURN ON THE VCR

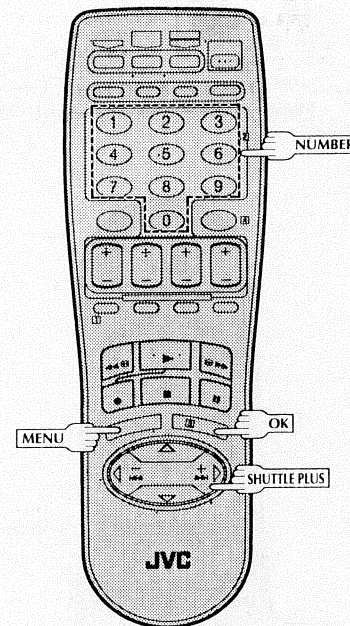
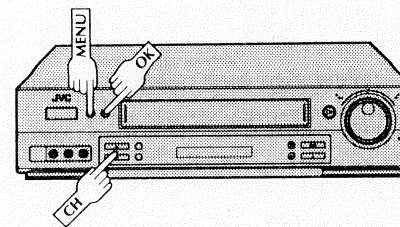
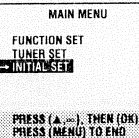
Press **POWER**.

ACCESS MAIN MENU SCREEN

Press **MENU**.

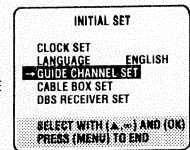
ACCESS INITIAL SET SCREEN

Press **CH▲∞** or **SHUTTLE PLUS Δ∇** to move the highlight bar (arrow) to "INITIAL SET", then press **OK** or **SHUTTLE PLUS Δ∇**.



ACCESS GUIDE CHANNEL SET SCREEN

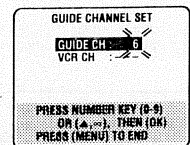
Press **CH▲∞** or **SHUTTLE PLUS Δ∇** to move the highlight bar (arrow) to "GUIDE CHANNEL SET", then press **OK** or **SHUTTLE PLUS Δ∇**.



INPUT GUIDE CHANNEL NUMBER

Press **CH▲∞**, **SHUTTLE PLUS Δ∇** or the appropriate **NUMBER** keys to input the VCR Plus+ Guide Channel number as shown in the TV listing. Then press **OK** or **SHUTTLE PLUS Δ∇**.

(Ex.) When inputting the Guide Channel number 6 for WJNU(Ind.)

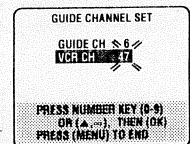


- If you receive your channels with a cable box and if you have properly set your Controller, "CABLE CH" appears in place of "VCR CH". If not, refer to pages 16 - 18 and re-perform the procedure.

INPUT RECEIVING CHANNEL NUMBER

Press **CH▲∞**, **SHUTTLE PLUS Δ∇** or the appropriate **NUMBER** keys to input the number of the channel on which the Guide Channel's broadcasts are received. Then press **OK** or **SHUTTLE PLUS Δ∇**.

(Ex.) If WJNU(Ind.) is received on channel 47



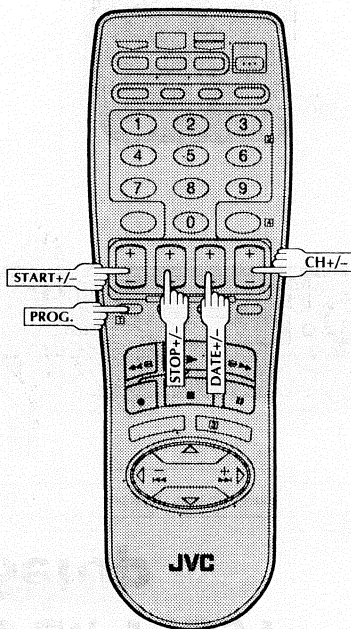
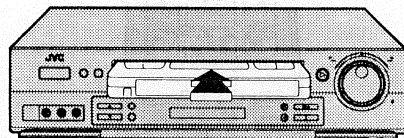
- Repeat steps 5 and 6 for each instance.

RETURN TO NORMAL SCREEN

Press **MENU**.

Express Timer Programming

Turn on the TV and select the VCR channel 3 or 4 (or AV mode).



You can directly program the VCR's timer to record up to 8 shows, as far as a year in advance. Remember, the clock must be set before you can program the timer (pg. 8 or 11).

LOAD A CASSETTE

Make sure the record safety tab is intact. If not, cover the hole with adhesive tape, then load it into the VCR.

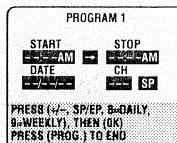
- The VCR comes on, and the counter is reset, automatically.

ACCESS VCR PLUS+ SCREEN

Press **PROG.**

ACCESS PROGRAM SCREEN

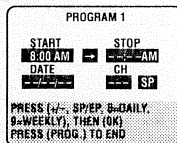
Press **START +/-**. (If you're just starting out, "PROGRAM 1" appears.)



SET PROGRAM START TIME

Press **START +/-** to enter the time you want recording to start.

- Press and hold **START +/-** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



SET PROGRAM STOP TIME

Press **STOP +/-** to enter the time you want recording to stop.

- Press and hold **STOP +/-** to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.

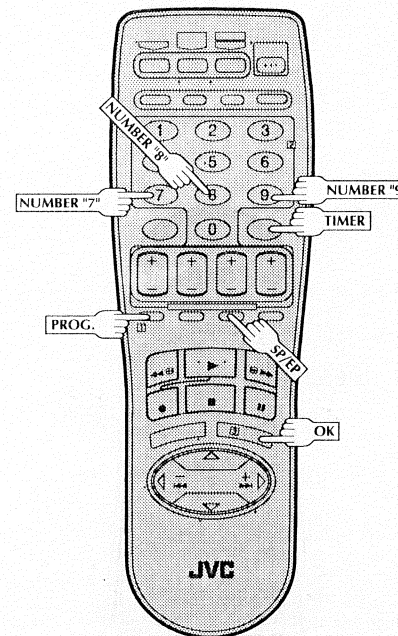
SET PROGRAM DATE

Press **DATE +/-**. (The current date is displayed on screen. The date you enter appears in its place.)

SET CHANNEL NUMBER

Press **CH +/-**.

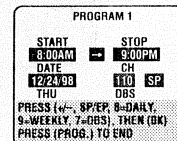
- If you are using a DBS receiver, see "ATTENTION FOR DBS RECEIVER USERS" on next page.
- Holding down **CH +/-** rapidly scans through the channels.



ATTENTION FOR DBS RECEIVER USERS

If you are using a DBS receiver (unless "DBS RECEIVER SET" is set to "OFF" pg. 20), the BAND indication (TV or CATV or DBS) appears under the channel number display. If the channel number that has been entered requires that the band be set, "7=DBS" is displayed on the screen. Press the **NUMBER** key "7" to select the desired band.

- a—TV : To timer-record a regular TV program received on the VCR.
- b—CATV : To timer-record a cable TV program received on the VCR, or through a cable box (unless "CABLE BOX SET" is set to "OFF" pg. 17).
- c—DBS : To timer-record a satellite program received through a DBS receiver.
- If "BAND" is set to "TV" at the Tuner Set screen (pg. 14) and "CABLE BOX SET" is set to "OFF" at the Cable Box Set screen (pg. 17), CATV will not be displayed on the Program screen; if "BAND" is set to "CATV" or "CABLE BOX SET" is set to "ON", TV will not be displayed.



SET TAPE SPEED

Press **SP/EP** to set the tape speed.

RETURN TO NORMAL SCREEN

Press **PROG.** or **OK**. "PROGRAM COMPLETED" appears on the screen for about 5 seconds, then normal screen appears.

ENGAGE TIMER MODE

Press **TIMER**. The VCR turns off automatically and "O" is displayed on the display panel.

To Timer-Record Weekly Or Daily Series . . .

. . . anytime during steps 3 through 9, press **WEEKLY** (**NUMBER** key "9") for weekly series or **DAILY** (**NUMBER** key "8") for daily series (Monday–Friday). Either "WEEKLY" or "DAILY" appears on the screen. Pressing the button again makes the corresponding indication disappear.

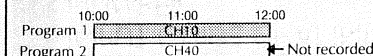
NOTES:

- To disengage the timer before recording starts, press **TIMER** again. Pressing once more re-engages it.
- In case of a power failure after programming, the VCR's memory backup keeps your selections for approximately 10 minutes.
- Programs that start after midnight must have the next day's date.
- After timer recording is completed, the VCR's power goes off automatically.
- You can program the timer while a regular recording is in progress; the on-screen menu will not be recorded.
- If the end of tape is reached during timer recording, the cassette is automatically ejected.
- When timer-recording cable or satellite channels through an external tuner, be sure to keep the cable box or satellite receiver's power ON.

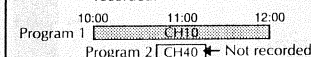
ATTENTION

If there is a conflict in the timer schedule and one program overlaps with another, only the parts shown below in gray will be recorded.

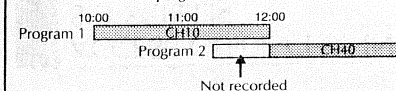
Pattern 1: The program with the lower program number will be recorded.

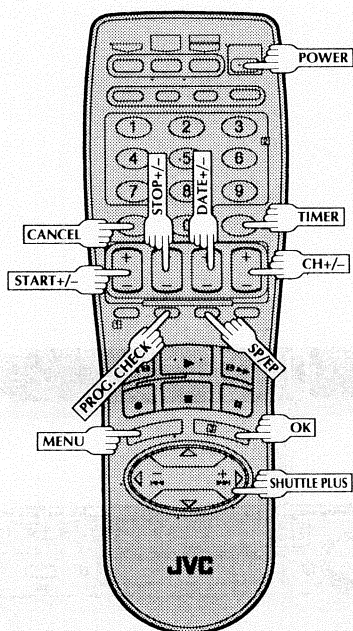
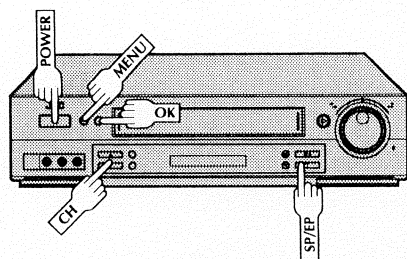


Pattern 2: The program that is broadcast earlier will be recorded.



Pattern 3: The program that is broadcast earlier will be recorded, followed by the remaining portion of the other program.





Check, Cancel And Revise Programs

1 DISENGAGE TIMER

Press **TIMER**, then press **POWER**.

2 ACCESS PROGRAM CHECK SCREEN

Press **PROG. CHECK**.

PR	START	STOP	CH	DATE
1	8:00P	10:00	12	12/24
2	10:00A	10:45	40	12/25
3	11:30P	01:00	125	12/25
4				
5				
6				
7				
8				

PRESS (CHECK) TO NEXT

3 ACCESS PROGRAM SCREEN

Press **PROG. CHECK** again to check more information. Each time you press **PROG. CHECK**, the next program's information appears.

To Cancel Or Revise A Program...

4 CANCEL OR REVISE A PROGRAM

To cancel a program, press **CANCEL** at the appropriate program screen.

To revise a program, press the appropriate button: **START+/-**, **STOP+/-**, **DATE+/-**, **CH+/-**, **SP/EP**.

5 RETURN TO NORMAL SCREEN

Press **PROG. CHECK** as many times as necessary. If there are still programs remaining, go to step 6.

6 RE-ENGAGE TIMER

Press **TIMER**.

Auto SP→EP Timer

If, when recording in SP mode, there is not enough tape to record the entire program, the VCR automatically switches to EP mode to allow complete recording. This feature is especially handy when recording a program of more than 2 hours in length.

For Example . . .

Recording a program of 140 minutes in length onto a 120-minute tape

SP mode	EP mode
Approximately 110 minutes	Approximately 30 minutes
Total 140 minutes	

Make sure you set "AUTO SP→EP TIMER" to "ON" at the Function screen before the timer recording starts.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸**.

3 SELECT AUTO SP→EP TIMER SET MODE

Move the highlight bar (arrow) to "AUTO SP→EP TIMER" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸** to set to "ON".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP→EP TIMER	ON
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▸) AND (OK) PRESS (MENU) TO END	

4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTES:

- If you have programmed the VCR to timer-record 2 or more programs, the second program and those thereafter may not fit on the tape if you set the Auto SP→EP Timer mode to "ON". In this case, make sure the mode is not engaged, then set the tape speed manually during timer programming.
- In order to ensure that the recording fits on the tape, this feature may leave a slight non-recorded section at the end of the tape.
- There may be some noise at the point on the tape where the VCR switches from SP to EP mode.
- The Auto SP→EP Timer feature is not available during ITR (Instant Timer Recording), and the feature will work with the following tapes: T(ST)-30, T(ST)-60, T(ST)-90, and T(ST)-120.

Auto Timer

When the Auto Timer is set to ON the timer is automatically engaged when the VCR's power is turned off. It is automatically disengaged when the VCR is powered back on.

1 ACCESS MAIN MENU SCREEN

Press **MENU**.

2 ACCESS FUNCTION SET SCREEN

Move the highlight bar (arrow) to "FUNCTION SET" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸**.

3 SELECT AUTO TIMER SET MODE

Move the highlight bar (arrow) to "AUTO TIMER" by pressing **CH ▲** or **SHUTTLE PLUS ▲**, then press **OK** or **SHUTTLE PLUS ▸** to set to "ON" or "OFF".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP→EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▸) AND (OK) PRESS (MENU) TO END	

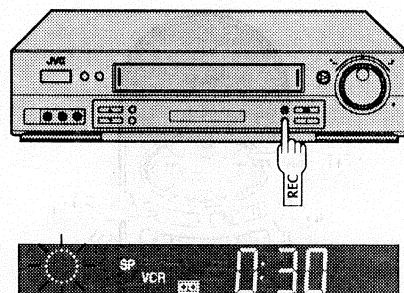
4 RETURN TO NORMAL SCREEN

Press **MENU**.

NOTE:

For safety, when AUTO TIMER is set to "OFF", all other VCR functions are disabled while the Timer mode is engaged. To disengage the timer, press **TIMER**.

Instant Timer Recording (ITR)



This easy method lets you record from 30 minutes to 6 hours (selectable in 30-min. increments) and shuts the VCR off after recording is finished.

1 START RECORDING

Press **REC** on the front panel.

2 ENGAGE ITR MODE

Press **REC** again. "0" " " blinks and 0:30 appears on the front display panel.

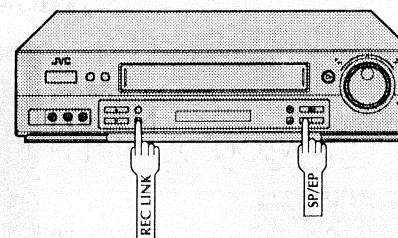
3 SET RECORDING DURATION

If you want to record for more than 30 minutes, press **REC** to extend the time. Each press extends recording time by 30 minutes.

NOTES:

- You can only perform ITR using the **REC** button on the VCR's front panel.
- After you set the ITR time, the previous display reappears.
- To check the remaining time, press **REC** once during recording and the remaining time will be displayed for about 5 seconds. Be careful not to press **REC** again within these 5 seconds, or you will round the recording time up to the next 30 minute increment.

Automatic Satellite Program Recording



ATTENTION

- Be sure not to turn on the satellite receiver before the program is executed; otherwise, the VCR will start recording when the satellite receiver's power is turned on.
- If you have connected another appliance other than a satellite receiver to the rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors, be sure not to engage the Auto Satellite Prog Rec mode; otherwise, the VCR will start recording when the connected appliance's power is turned on.
- Auto Satellite Prog recording and timer-recording cannot be done at the same time.

NOTES:

- Auto Satellite Prog recording is not possible with the front AUDIO/VIDEO IN (F-1) connectors.
- When the Auto Satellite Prog Rec mode is engaged or the VCR's power is turned off after Auto Satellite Prog recording is finished, the VCR will not enter the Timer mode even though "AUTO TIMER" is set to "ON".
- For timer programming of the satellite receiver, refer to the instruction manual of the satellite receiver.
- Auto Satellite Prog recording is not possible if your satellite receiver does not have a timer.
- The **REC LINK** button's light blinks while Auto Satellite Prog recording is in progress.
- Pressing the VCR's **POWER** button while Auto Satellite Prog recording is in progress turns off the VCR's power and disengages the Auto Satellite Prog Rec mode.
- If there is more than one satellite program you wish to record with Auto Satellite Prog Recording, it is not possible to set a different tape speed for each; the tape speed selected in step 1 will apply to all the programs for Auto Satellite Prog recording.
- The Active Video Calibration (pg. 32) does not work while Auto Satellite Prog recording is in progress.
- Auto Clock (pg. 9) does not work when the Auto Satellite Prog Rec mode is engaged.
- Depending on the type of satellite receiver, the VCR may not record a short portion at the beginning of the program or may record slightly longer than the actual length of the program.
- If you engage the Auto Satellite Prog Rec mode when the satellite receiver's power is on, the VCR will not start Auto Satellite Prog recording even though the **REC LINK** button's light blinks. When the satellite receiver shuts off once and is turned back on again, the VCR starts recording.
- You can also record a program from your cable system in the same way if the system has a timer and is connected to the VCR's rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors.
- When you press the VCR's **REC LINK** button to engage the Auto Satellite Prog Rec mode, if the **REC LINK** button does not light but instead blinks quickly even though your satellite receiver's power is off, Auto Satellite Prog Recording will not work properly with that satellite receiver*.

If this is the case, perform "Express Timer Programming" (pg. 42) to timer-record a satellite program.

* Some satellite receivers output signals even if the power is off. Auto Satellite Prog Recording is not possible with those satellite receivers.

This facility allows you to automatically record a satellite program which is timer-programmed on your external satellite receiver. Connect a satellite receiver to the VCR's rear AUDIO/VIDEO IN or S VIDEO IN* (L-1) connectors and program the timer on the satellite receiver; the VCR starts recording when the signals input from the satellite receiver to the rear AUDIO/VIDEO IN or S VIDEO IN (L-1) connectors, and when there is no input signals the VCR stops recording and the power shuts off.

* If you have connected the satellite receiver to the VCR's S VIDEO IN connector, set "REAR AUX INPUT" to "S-VIDEO" at the Function screen (pg. 49 - 50).

Before performing the following steps:

- Program the timer on the satellite receiver.
- Insert a cassette with the safety tab in place.

1 SET TAPE SPEED

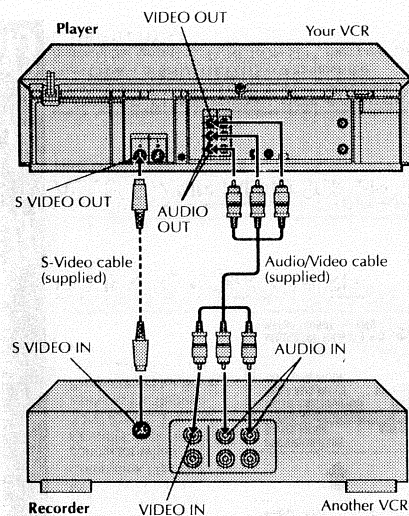
Press **SP/EP** to set the tape speed.

2 ENGAGE AUTO SATELLITE PROG REC MODE

Press and hold **REC LINK** for about 2 seconds. The button lights up and the VCR turns off automatically.

- To disengage the Auto Satellite Prog Rec mode, press **REC LINK**. The button's light goes off.
- If the VCR's power is off, it is not possible to engage the Auto Satellite Prog Rec mode.

Edit To Or From Another VCR



Advantages Of S-VHS Editing

S-VHS allows you make high resolution video recordings when dubbing from one VCR to another.

You can edit from VHS to S-VHS, from S-VHS to VHS, or from S-VHS to S-VHS.

- From VHS to S-VHS (VIDEO-VIDEO connection): Record VHS playback signals in the S-VHS mode. Although the picture quality is inherently limited by the original VHS source material, the edited tape has better picture quality than those made by VHS-to-VHS editing.
- From S-VHS to VHS (VIDEO-VIDEO connection): Because the picture quality of the source material is very high, the edited tape has better picture quality than those made by VHS-to-VHS editing.
- From S-VHS to S-VHS (S-VIDEO connection): A high resolution copy is made of a high resolution original S-VHS tape with minimal picture degradation. This is the preferred method of video dubbing.

You can use your VCR as the player or the recorder.

1 MAKE CONNECTIONS

Connect an AV cable between the player's VIDEO OUT and AUDIO OUT connectors and the recorder's VIDEO IN and AUDIO IN connectors.

- If using another VCR with an S-VIDEO input or output connector, it is recommended to use the S-VIDEO connection to minimize picture degradation while editing.
- When using your VCR as the recorder and a monaural VCR as the player, connect the player's AUDIO OUT connector to the AUDIO IN L connector on the recorder.

2 LOAD CASSETTES

Insert the playback cassette into the player and the cassette to be recorded on into the recorder.

3 SET RECORDER'S INPUT MODE

Set to "AUX". With this VCR, press the **NUMBER** key "0" and/or **CH** to select depending on the connector being used — "L-1" for the rear AUDIO/VIDEO IN connector, or "F-1" for the front AUDIO/VIDEO IN connector.

NOTE:

If you use your VCR as the recorder and have connected another VCR to your VCR's S-VIDEO IN connector, you need to set "REAR AUX INPUT" to "S-VIDEO" at the Function screen. Follow steps 4 – 6 from the "Edit From A Camcorder" section (pg. 49 – 50).

4 ENGAGE TAPE DUBBING MODE

Follow steps 12 – 14 from the "Edit From A Camcorder" section (pg. 50).

5 START PLAYER

Set to its play mode.

6 NOTE:

If the player is equipped with a superimpose/OSD disable feature then set "SUPERIMPOSE" to OFF before pressing **PLAY** (pg. 28).

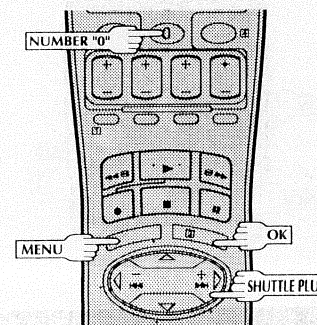
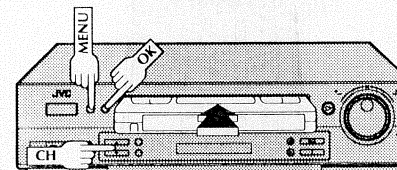
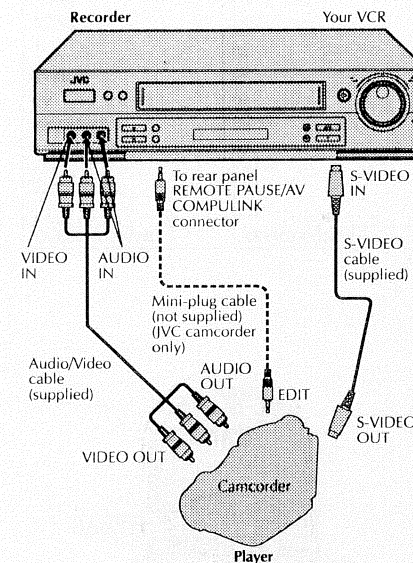
7 START RECORDER

Set to its record mode.

NOTES:

- Be sure to set "TAPE DUB MODE" back to "OFF" when you finish editing.
- When "TAPE DUB MODE" is set to "ON" Active Video Calibration is deactivated in order to provide better picture quality edits.
- If you use an auxiliary input to connect a cable box or DBS receiver make sure that the correct input ("L-1", "F-1" or "S-VIDEO") is selected after you have finished editing (pg. step 6, page 49).

Edit From A Camcorder



You can use a camcorder as the player and your VCR as the recorder.

1 MAKE CONNECTIONS

Connect an AV cable between the camcorder's VIDEO OUT and AUDIO OUT connectors and your VCR's VIDEO IN and AUDIO IN connectors.

- If connecting a camcorder with an S-VIDEO output connector, it is recommended to use the S-VIDEO connection to minimize picture degradation while editing.
- When a Master Edit Control-equipped JVC camcorder is used, the camcorder is capable of controlling your VCR. The mini-plug cable is a mono 3.5 mm mini-plug to mono 3.5 mm mini-plug connector.
- If connecting to a camcorder with a monaural output, connect the audio output connector on the camcorder to AUDIO IN L of the VCR.

2 LOAD A CASSETTE

Insert the cassette to be recorded on into the recorder.

3 SET RECORDER'S INPUT MODE

Set to "AUX". Press the **NUMBER** key "0" and/or **CH** to select depending on the connector being used — "L-1" for the rear AUDIO/VIDEO IN connector, or "F-1" for the front AUDIO/VIDEO IN connector.

If you have connected a JVC Master Edit Control-equipped camcorder to...

- ... the VCR's rear panel S-VIDEO IN and AUDIO IN connectors — step 4
- ... the VCR's rear panel VIDEO IN and AUDIO IN connectors — step 4
- ... the VCR's front panel VIDEO IN and AUDIO IN connectors — step 8

If you are not using a JVC Master Edit Control-equipped camcorder — step 12

4 ACCESS MAIN MENU SCREEN

Press **MENU**.

5 ACCESS FUNCTION SET SCREEN

Press **CH** Δ or **SHUTTLE PLUS** Δ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **SHUTTLE PLUS** Δ .

6 SELECT REAR AUX INPUT SET MODE

- a- S-VHS IN: Move the highlight bar (arrow) to "REAR AUX INPUT" by pressing **CH** Δ or **SHUTTLE PLUS** Δ , then press **OK** or **SHUTTLE PLUS** Δ to set to "S-VIDEO".
- b- REAR VIDEO: Move the highlight bar (arrow) to "REAR AUX INPUT" by pressing **CH** Δ or **SHUTTLE PLUS** Δ , then press **OK** or **SHUTTLE PLUS** Δ to set to "VIDEO".

FUNCTION		OFF
AUTO TIMER	ON	ON
SUPERIMPOSE	ON	ON
AUTO SP-EP TIMER	OFF	OFF
VIDEO STABILIZER	OFF	OFF
2ND AUDIO RECORD	OFF	OFF
AUDIO MONITOR	HI-FI	HI-FI
NEXT PAGE		
SELECT WITH (Δ , ∞) AND (OK)		
PRESS (MENU) TO END		

PREVIOUS PAGE		
S-VHS MODE	AUTO	ON
AV COMPU-LINK	ON	ON
VIDEO CALIBRATION	ON	ON
REAR AUX INPUT	S-VIDEO	ON
TAPE DUB MODE	ON	ON
SELECT WITH (Δ , ∞) AND (OK)		
PRESS (MENU) TO END		

7 RETURN TO NORMAL SCREEN

Press **MENU**.

8 ACCESS MAIN MENU SCREEN

Press **MENU**.

9 ACCESS FUNCTION SET SCREEN

Press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **SHUTTLE PLUS** ▸.

10 ENABLE REMOTE PAUSE FUNCTION

Press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "AV COMPU-LINK", then press **OK** or **SHUTTLE PLUS** ▸ to set to "OFF".

- The REMOTE PAUSE/AV COMPU-LINK connector works as the AV Compulink Playback connector when "AV COMPU-LINK" is set to "ON" (⇨ pg. 31), and works as the Remote Pause connector when "AV COMPU-LINK" is set to "OFF".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▽) AND (OK) PRESS (MENU) TO END	

PREVIOUS PAGE	
S-VHS MODE	AUTO
AV COMPU-LINK	OFF
VIDEO CALIBRATION	ON
REAR AUX INPUT	VIDEO
TAPE DUB MODE	ON
SELECT WITH (▲, ▽) AND (OK) PRESS (MENU) TO END	

11 RETURN TO NORMAL SCREEN

Press **MENU**.

12 ACCESS MAIN MENU SCREEN

Press **MENU**.

13 ACCESS FUNCTION SET SCREEN

Press **CH** ▲ or **SHUTTLE PLUS** ▲ to move the highlight bar (arrow) to "FUNCTION SET", then press **OK** or **SHUTTLE PLUS** ▸.

14 SELECT TAPE DUB MODE

Move the highlight bar (arrow) to "TAPE DUB MODE" by pressing **CH** ▲ or **SHUTTLE PLUS** ▲, then press **OK** or **SHUTTLE PLUS** ▸ to set to "ON".

FUNCTION	
AUTO TIMER	OFF
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
2ND AUDIO RECORD	OFF
AUDIO MONITOR	HI-FI
NEXT PAGE	
SELECT WITH (▲, ▽) AND (OK) PRESS (MENU) TO END	

PREVIOUS PAGE	
S-VHS MODE	AUTO
AV COMPU-LINK	ON
VIDEO CALIBRATION	ON
REAR AUX INPUT	VIDEO
TAPE DUB MODE	ON
SELECT WITH (▲, ▽) AND (OK) PRESS (MENU) TO END	

15 RETURN TO NORMAL SCREEN

Press **MENU**.

16 START PLAYER

Set the camcorder to its play mode.

NOTE:

If the camcorder is equipped with a superimpose/OSD disable feature then set its superimpose or display feature to OFF before pressing play.

17 START RECORDER

Set your VCR to its record mode.

- If you are using a Master Edit Control-equipped JVC camcorder, it can put the recorder automatically into Record mode. (Refer to camcorder's instruction manual.)

NOTES:

- Be sure to set "TAPE DUB MODE" back to "OFF" when you finish editing.
- When "TAPE DUB MODE" is set to "ON" Active Video Calibration is deactivated in order to provide better picture quality edits.
- If you use an auxiliary input to connect a cable box or DBS receiver make sure that the correct input ("L-1", "F-1" or "S-VIDEO") is selected after you have finished editing ⇨ step 3, 6, pg. 49).

TV Multi-Brand Remote Control

The VCR's remote control can control several functions on JVC remote control TVs and on the brands of remote control TVs listed below. *The default setting is JVC code 01.

1 TURN ON THE TV

Turn the power on using the TV's remote control.

2 SET TV BRAND CODE

Refer to the chart in the left column. While holding down **TV** on the VCR's remote control, press **MBR SET** and enter your TV's brand code using the **NUMBER** keys, then press **STOP**.

Follow the example shown below.

The TV's power should go off. If it does, try other operations (⇨ step 3).

- Once you have set the remote control to operate the TV, you don't have to repeat this step until you replace your remote control's batteries.
- PANASONIC has two codes. If the TV does not function with one code, try entering the other.

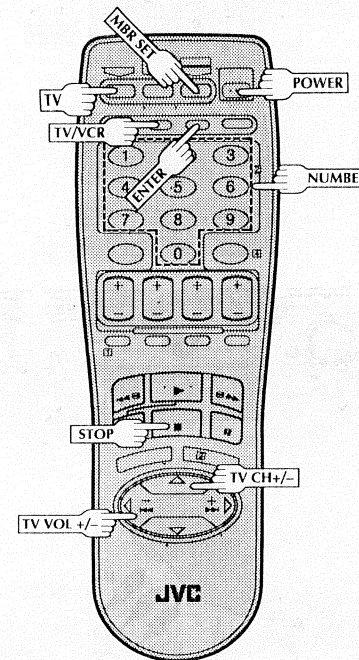
3 OPERATE TV

First, while holding down **TV**, press the corresponding button: **POWER**, **TV CH +/-**, **TV/VCR**, **TV VOL +/-**, **NUMBER** keys.

- For some brands of TV, you must press **ENTER** after having pressed the **NUMBER** keys.

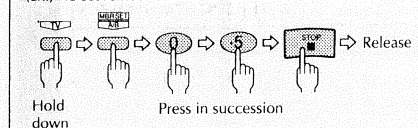
NOTE:

Depending on the type of TV, there may be cases where some or all functions cannot be operated using the remote control.



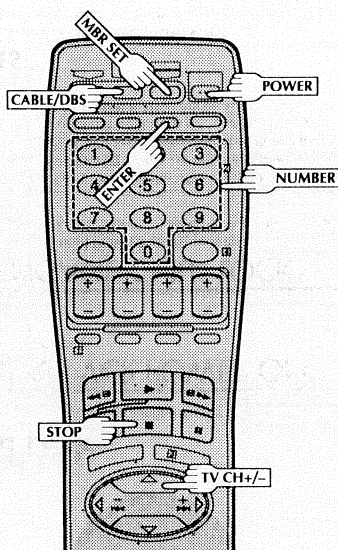
TV BRAND NAME	BRAND CODE
JVC	01
MAGNAVOX	02
MITSUBISHI	03
PANASONIC	04, 11
RCA	05
SHARP	06
SONY	07
TOSHIBA	08
ZENITH	09
HITACHI	10
SAMSUNG	12
SANYO	13
SEARS	13

(Ex.) To set remote control to RCA 05:



Cable Box Multi-Brand Remote Control

The VCR's remote control can control functions on the brands of cable boxes listed below. Some cable box brands have more than one code. If your cable box does not function with a specified code, try other codes.



1 TURN ON THE CABLE BOX

Turn the power on using the cable box's remote control.

2 ENTER CABLE BOX BRAND

While holding down **CABLE/DBS** on the VCR's remote control, press **MBR SET** and use the **NUMBER** keys to enter the cable box brand number from the chart in the left column and then press **STOP**.

Follow the example shown below.

The cable box's power should go off. If it does, try other operations (⇨ step 3).

- Once you have set the remote control to operate the cable box, you don't have to repeat this step until you replace the remote control's batteries.

3 OPERATE CABLE BOX

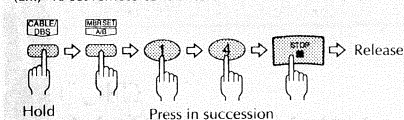
First, while holding down **CABLE/DBS**, press the corresponding button: **POWER**, **TV CH +/-**, **NUMBER** keys.

- For some brands of cable box, you must press **ENTER** after having pressed the **NUMBER** keys.
- To change the cable box's channel, press **TV CH +/-** or the **NUMBER** keys. (The **CH +/-** button can be used to change the VCR's channel only.)

NOTES:

- Depending on the type of cable box, there may be cases where some or all functions cannot be operated using the remote control.
- It's not possible to set the remote control for both your cable box and a DBS receiver at the same time. You can only set the remote control to operate one of these units at a time.

(Ex.) To set remote control to RCA 14:



CABLE BOX BRAND NAME	BRAND CODE
ARCHER	01, 05, 17
CABLETENNA	01, 17
CABLEVIEW	15, 16, 17, 21, 25
CITIZEN	15, 16, 17, 21, 25
CURTIS	02
DIAMOND	01, 17
EASTERN	19
GC BRAND	15, 16, 17, 21, 25
GEMINI	15
GENERAL INSTRUMENTS	01, 04, 06, 11, 12, 15
HAMLIN	10, 18, 19, 23
JASCO	15
JERROLD	01, 04, 06, 11, 12, 15
NOVAVISION	02
OAK	07
PANASONIC	13, 14
PULSER	15, 16, 17, 21, 25
RCA	13, 14
REGAL	10, 18, 19, 23
REGENCY	19
REMBRANDT	01, 16, 17
SAMSUNG	05, 16, 24
SCIENTIFIC ATLANTA	02
SIGMA	07
SL MARX	05, 16, 17, 24, 25
SPRUCER	13, 14
STARGATE	05, 15, 16, 17, 21, 24, 25
TELEVIEW	05, 16, 24
TOCOM	01, 04, 16
UNIKA	01, 17
UNIVERSAL	16, 17, 25
VIDEOWAY	03, 09, 22
ZENITH	03, 09, 22

DBS Receiver Multi-Brand Remote Control

The VCR's remote control can control functions on the brands of DBS (Direct Broadcast Satellite) receivers listed below.

1 TURN ON THE DBS RECEIVER

Turn the power on using the DBS receiver's remote control.

2 ENTER DBS RECEIVER BRAND

While holding down **CABLE/DBS** on the VCR's remote control, press **MBR SET** and use the **NUMBER** keys to enter the DBS receiver brand number from the chart in the left column and then press **STOP**.

Follow the example shown below.

The DBS receiver's power should go off. If it does, try other operations (⇨ step 3).

- Once you have set the remote control to operate the DBS receiver, you don't have to repeat this step until you replace the remote control's batteries.

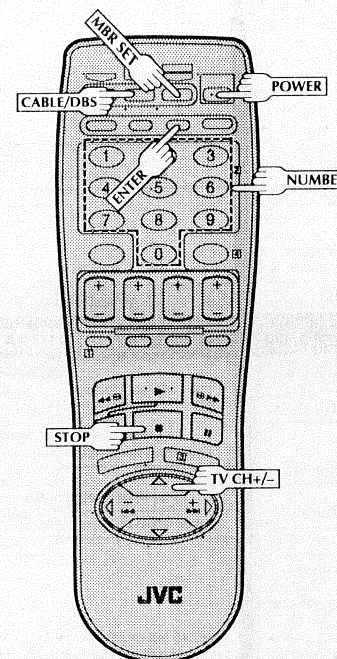
3 OPERATE DBS RECEIVER

First, while holding down **CABLE/DBS**, press the corresponding button: **POWER**, **TV CH +/-**, **NUMBER** keys.

- Depending on the DBS receiver you may have to press **ENTER** after having pressed the **NUMBER** keys.
- To change the DBS receiver's channel, press **TV CH +/-** or the **NUMBER** keys. (The **CH +/-** button can be used to change the VCR's channel only.)

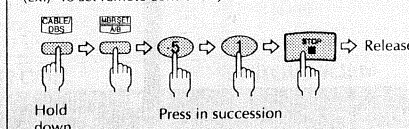
NOTES:

- Depending on the type of DBS receiver, there may be cases where some or all functions cannot be operated using the remote control.
- It's not possible to operate a DBS receiver that is not equipped with a remote control sensor.
- Though ECHOSTAR has a number of different remote codes, this remote control is applicable only to one of those codes preset at the factory.
- It's not possible to set the remote control for both your DBS receiver and a cable box at the same time. You can only set the remote control to operate one of these units at a time.



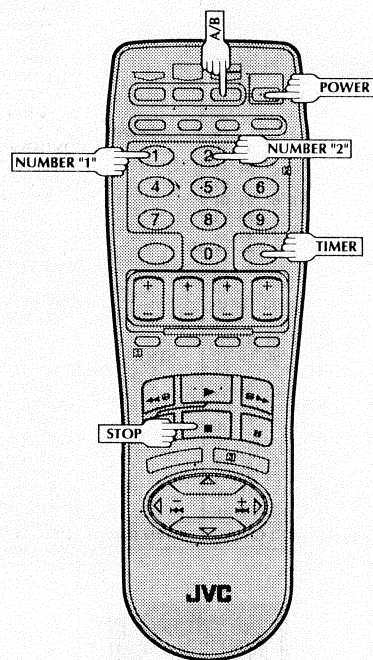
DBS BRAND NAME	BRAND CODE
JVC (DISH Network)	51
ECHOSTAR (DISH Network)	51
PRIMESTAR	50
SONY (DSS)	41
RCA (DSS)	40

(Ex.) To set remote control to JVC 51:



Control Two JVC VCRs

The remote control is capable of controlling two JVC VCRs independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your VCR is initially set to respond to A code signals. You can easily modify your VCR to respond to B code signals.



1 UNPLUG VCR'S POWER CORD

Unplug from the AC outlet.

2 SET REMOTE CONTROL CODE

While holding down A/B on the remote control, press the NUMBER key "2" and then press STOP.

3 PLUG IN POWER CORD

Plug back in to the AC outlet.

4 TURN VCR POWER ON

Press POWER on the remote.

The VCR will now respond only to B-code commands. To set the VCR back to respond to A code signals, repeat the same procedure as shown above except pressing NUMBER key "1" instead of "2" in step 2.

You can control two VCRs with the same remote control by switching the remote's code between A and B (Step 2), pressing "1" for A-code commands and "2" for B-code commands.

Child Lock

This feature allows you to prevent the operation of the VCR.

1 TURN VCR POWER ON

Press POWER.

2 ENGAGE CHILD LOCK

Press and hold POWER on the remote control until the Child Lock indicator (C) appears on the front display panel.

- Power turns OFF and the VCR cannot be turned on from the POWER button on the front panel.
- To cancel Child Lock, press and hold POWER on the remote until the VCR turns on. During timer recording, pressing TIMER also cancels Child Lock.

NOTES:

- When Child Lock is engaged, make sure to keep the remote control out of the reach of children.
- Timer recording of programs that were previously set can be performed while the Child Lock is engaged. The feature remains in effect after the recording is finished.

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your VCR off for repair.

POWER

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The power won't come on.	• The power cord is disconnected.	Connect the power cord.
2. The clock works, but the VCR's power won't come on.	• The TIMER mode is engaged with Auto Timer set to "OFF" (pg. 45). • The Child Lock mode is engaged.	Press TIMER to disengage. Press and hold POWER on the remote to disengage the mode (pg. 54).
3. The remote control won't function.	• The batteries are discharged.	Replace the dead batteries with new ones.

TAPE TRANSPORT

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The cassette gets stuck partway during loading, and is ejected.	• The cassette was inserted incorrectly.	Make sure the cassette's window is facing up, the rear label side is facing you and the arrow on the front of the cassette is pointing towards the VCR. Then insert the cassette.

PLAYBACK

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The tape is running but the picture won't appear.	• If you're using the RF OUT connection (pg. 6), the channel selector on the TV is set incorrectly. • If you're using the AV connection (pg. 6), the TV receiver is set to the wrong mode.	Set the channel selector to channel 3 or 4. Set the TV receiver to its AV mode.
2. Noise appears during visual search.	• This is normal.	
3. Breaks are noticeable in Hi-Fi soundtrack.	• Automatic tracking is engaged.	Disengage Auto Tracking and adjust the tracking manually (pg. 25).
4. The playback picture is blurred or interrupted, even though TV broadcasts are clear.	• The video heads may be dirty.	The heads must be cleaned. Consult your JVC dealer.
5. The Hi-Fi soundtrack cannot be heard.	• The AUDIO MONITOR option was set incorrectly.	Set AUDIO MONITOR to "HI-FI" (pg. 29).

RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording won't start.	• There's no cassette loaded. • The loaded cassette has had its record safety tab removed.	Insert a cassette. Remove the cassette and cover the hole with adhesive tape, or load a cassette on which the record safety tab is intact.
2. TV broadcasts won't record properly.	• The VCR has been set to its AUX mode by mistake.	Set the VCR to the appropriate channel.
3. Tape-to-tape editing won't work.	• The VCRs or the camcorder and the VCR have been incorrectly connected. • The power to one or more of the units has not been turned on. • The recorder's input mode has been set incorrectly.	Refer to the directions and the illustration under "Edit To Or From Another VCR" (pg. 48) or "Edit From A Camcorder" (pg. 49) and properly connect the units. Make sure the power to all units is on. Select the recorder's appropriate input mode.

CONTINUED ON NEXT PAGE

TIMER RECORDING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	- The clock and/or the timer have been set incorrectly. - The timer is not engaged. - The VCR has not been set up properly.	Set the clock and/or timer correctly. Press TIMER and check to make sure that  appears on the front display panel. Re-perform the set-up procedures. Make sure you have compensated for Guide Channel and VCR or cable box channel number mismatches (pg. 40).
2. Timer programming won't work.	Timer recording is in progress.	Timer programming can't be performed when timer recording is in progress. Wait until it finishes.
3.  and  on the front display panel won't stop blinking.	The timer is engaged but there's no cassette loaded.	Load a cassette with the record safety tab intact, or with the hole covered with adhesive tape.
4. The cassette is automatically ejected, and  and  on the front display panel won't stop blinking.	The loaded cassette has had its record safety tab removed.	Remove the cassette and cover its hole with adhesive tape, or replace it with a cassette on which the safety tab is intact.
5.  blinks for 10 seconds and the timer mode is disengaged.	TIMER has been pressed when there are no programs in memory, or the timer record program information has not been programmed correctly.	Check the programmed data and re-program as necessary, then press TIMER again.
6. The cassette is automatically ejected, the power shuts off and  and  won't stop blinking.	The end of tape was reached during timer recording.	The program may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire program.
7. Cable channels are not automatically switched during timer recording.	- The Controller is not properly connected to the VCR. - The output channel selected in the Cable Box Set screen is incorrect. - The cable box's power is off.	Connect the Controller correctly (pg. 16). After confirming your cable box's output channel number, re-access the Cable Box Set screen and select the correct number (pg. 17). Make sure the power is on before timer recording starts.
8. Satellite channels are not automatically switched during timer recording.	- The Controller is not properly connected to the VCR. - The output channel selected in the DBS Receiver Set screen is incorrect. - The VCR is not set correctly to control the DBS Receiver - The DBS receiver's power is off.	Connect the Controller correctly (pg. 19). After confirming your DBS receiver's output channel number, re-access the DBS Receiver Set screen and select the correct number (pg. 20). Set the correct DBS Receiver brand code (pg. 21). Make sure the power is on before timer recording starts.
9. Timer recording begins as scheduled, but the channel is always incorrect.	Even though you don't use an external Cable Box, "CABLE BOX SET" is set to "ON".	Set "CABLE BOX SET" to "OFF" (pg. 17).
10. We moved, and now VCR Plus+ doesn't work properly.	The receivable stations in the new area are received on different channels than those in the previous area.	Re-perform the VCR Plus+ setup procedure (pg. 40).
11. "PROGRAM FULL" is displayed on the screen.	All 8 programs of the VCR's timer memory are used.	Wait until a space in memory clears, or cancel unnecessary program information (pg. 44).

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. When scanning channels, some of them are skipped over.	Those channels have been preset to be skipped.	If you need the skipped channels, restore them (pg. 15).
2. The channel can't be changed.	Recording is in progress.	Press PAUSE to pause the recording, change channels, then press PLAY to resume recording.
3. The remote control won't operate my TV or cable box or DBS receiver.	The remote control brand setting is incorrect.	Re-set the remote control to the correct brand (pg. 51 or 52 or 53).
4. Even though Auto or Semi-Auto clock setting has been selected, the clock is incorrect.	The clock setting data received from the Host Channel is incorrect.	Select a different Host Channel during the Semi-Auto setting procedure (pg. 12), or perform the Manual setting procedure (pg. 13).

ATTENTION

This VCR contains microcomputers. External electronic noise or interference can cause microcomputer to malfunction. If the VCR does not operate correctly switch its power off and unplug the power cord from the AC supply. Wait for a while and then plug the power back in. Eject and check the condition of the cassette. If everything appears normal resume operating the VCR as usual.

PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?

A. The tape is automatically rewound to the beginning.

Q. Can the VCR indefinitely remain in the still mode?

A. No. It stops automatically after 5 minutes to protect the heads.

Q. During search, slow, still and frame-by-frame playback, I can't hear any audio. What's the problem?

A. This is normal.

Q. During search, still and frame-by-frame playback, the picture is intermittent. What's the cause?

A. Picture loss occurs when these types of playback are attempted with a tape recorded in LP mode. Pressing **PLAY** to return to normal playback will restore the picture.

Q. When returning from multi-speed search to normal playback, the picture is disturbed. Should I be concerned about this?

A. No, it is normal.

Q. Noise bars appear during multi-speed search. What's the problem?

A. This is normal.

Q. When playing back programs that have been timer-recorded with consecutive times (such one program from 8:00 to 9:00 and another one from 9:00 to 10:00), the picture and sound become momentarily distorted at the point where the first program ends and the second program begins. Is this a malfunction?

A. No. This is normal.

Q. Other than preventing further recording, what effect does removing the safety tab have?

A. It disables marking of index codes.

Q. Sometimes, during Index Search, the VCR can't find the program I want to see. Why not?

A. There may be index codes too close together.

Q. During playback, on-screen operational indicators sometimes jitter. Why does this happen?

A. If the condition of the tape being played back is not good, jittering of the video (including on-screen indicators) may occur.

RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the new recording. Why does this happen?

A. This is normal. It reduces distortion at the pause and resume points.

Q. Can the VCR indefinitely remain in the Record-Pause mode?

A. No. The VCR automatically goes to its Stop mode after 5 minutes to protect the heads. When paused during Instant Timer Recording (ITR), the VCR shuts off automatically after 5 minutes.

Q. What happens if the tape runs out during recording?

A. The VCR automatically rewinds it to the beginning.

TIMER RECORDING

Q. REC and Ⓢ remain lit on the front display panel. Is there a problem?

A. No. This is a normal condition for a timer recording in progress.

Q. Can I program the timer while I'm watching a tape or a TV broadcast?

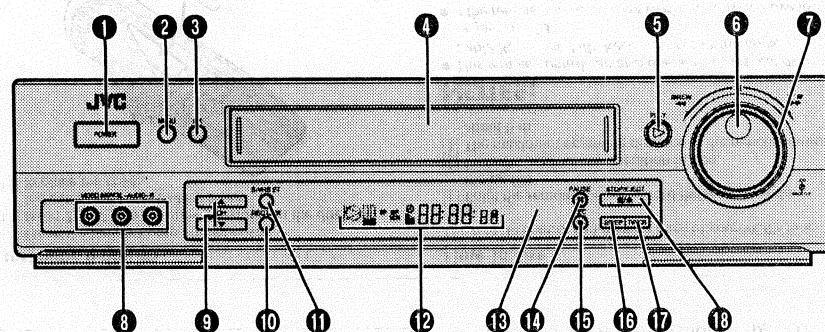
A. Yes, but while you are setting the timer you won't see the tape's or broadcast program's picture as it is replaced by the on-screen menu. The audio from the tape or broadcast program will be present during the setting of the timer.

List Of Terms

This guide serves as a quick way to locate frequently used terms and on-screen display names.

A	M
A/B Code 54	Main Menu 10
Active Video Calibration 32	Manual Channel Setting 15
Add Channel 15	Manual Clock Setting 13
Audio Monitor 29	Manual Tracking 25
Auto Channel Setting 14	MBR (Multi-Brand Remote) Code Setting 51
Auto Daylight Saving Time 12	Movie Advance 30
Auto SP → EP Timer 45	N
Auto Timer 45	Next-Function Memory 27
Automatic Tracking 25	O
Aux Input 48	On-Screen Display 28
AV Compu Link Playback 31	P
AV Connection 6	PBS Channel 8
B	Playback 22
Band 14	Plug & Play 8
C	R
Cable Box 16	REC LINK 47
Cable Box Brand Setting 18	Record Safety Tab 23
Cable Box Controller 16	Recording 23
Cancel Program 44	Repeat Playback 27
Cassette Adapter 22	Reverse Motion Playback 24
Check Program 44	Reverse Slow Motion Playback 24
Child Lock 54	RF Connection 6
Connection to TV 6	S
Contents 5	SAP (Second Audio Program) 37
Counter Reset 27	Second Audio 37
D	Select Cable Box Output Channel 17
DBS Receiver 19	Select DBS Receiver Output Channel 20
DBS Receiver Brand Setting 21	Semi-Auto Clock Setting 12
DBS Receiver Controller 19	Skip Search 25
Delete Channel 15	Slow Motion Playback 24
E	Specifications 63
Editing 48	Still Picture Playback 24
Express Timer Programming 42	Superimpose 28
Express Timer Recording 42	S-VHS (Super VHS) 35
F	S-VHS ET 36
Frame-by-Frame Playback 24	S-Video Connection 7
G	T
Guide Channel Setting 41	Tape Position Indicator 27
H	Tape Speed Setting 23
Host Channel Selection 12	Time Zone Selection 13
I	Tuner Setting 14
Index Search 25	V
Insert Cassette 22	Variable-Speed Search 25
Instant ReView 27	VCR Plus+ Timer Programming 38
ITR (Instant Timer Recording) 46	VCR Plus+ Timer Recording 38
L	Video Stabilizer 26
Language Selection 10	

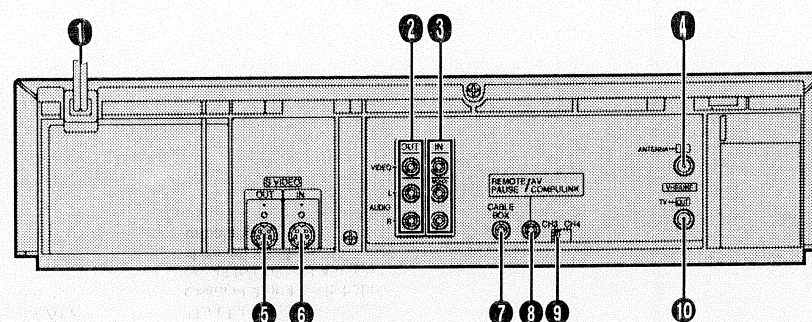
FRONT VIEW



- 1 Power On/Off Button (pg. 10)
- 2 MENU Button (pg. 10)
- 3 OK Button (pg. 10)
- 4 Cassette Loading Slot
- 5 PLAY Button (pg. 22)
- 6 JOG Dial (pg. 24)
- 7 SHUTTLE Ring (pg. 22)
- 8 VIDEO/AUDIO Input Connectors (pg. 49)
- 9 Channel [CH] ▲∞ Button (pg. 23)

- 10 REC LINK Button (pg. 47)
- 11 S-VHS ET Button (pg. 36)
- 12 Front Display Panel (pg. 61)
- 13 Remote Control Sensor
- 14 PAUSE Button (pg. 24)
- 15 Record [REC] Button (pg. 23)
- 16 SP/EP Button (pg. 23)
- 17 TV/VCR Button (pg. 34)
- 18 STOP/EJECT Button (pg. 22)

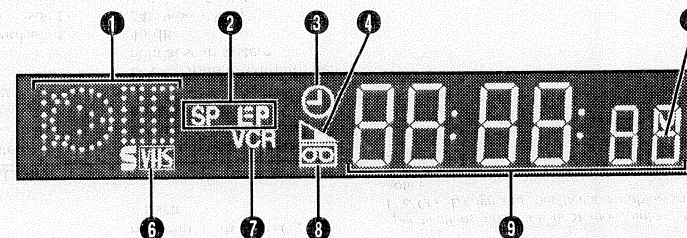
REAR VIEW



- 1 Power Cord (pg. 6)
- 2 VIDEO/AUDIO Output Connectors (pg. 48)
- 3 VIDEO/AUDIO Input Connectors (pg. 48)
- 4 ANTENNA IN Connector (pg. 6)
- 5 S-Video (S-VHS) Output Connector (pg. 48)
- 6 S-Video (S-VHS) Input Connector (pg. 48)

- 7 CABLE BOX Controller Connector (pg. 16, 19)
- 8 REMOTE PAUSE/AV COMPULINK Connector
 - REMOTE PAUSE Connector (pg. 49)
 - AV COMPU-LINK Connector (pg. 31)
- 9 Channel 3/4 Switch (pg. 6)
- 10 TV OUT Connector (pg. 6)

FRONT DISPLAY PANEL

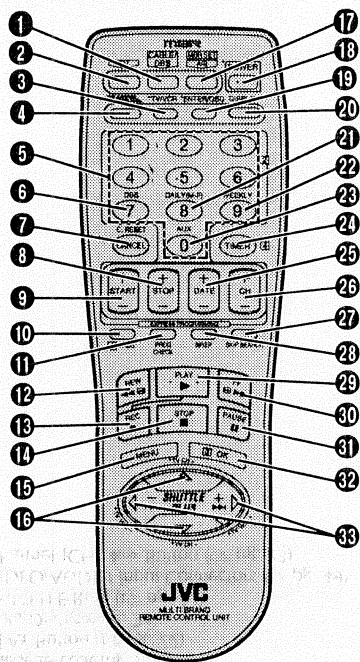


- 1 Symbolic Mode Indicators

PLAY: FF/REW VARIABLE SEARCH:	STILL: SLOW:	▶▶
	RECORD:	○
	RECORD PAUSE:	○

- 2 Tape Speed Indicators (pg. 23)
- 3 Timer Mode Indicator
- 4 Tape Remaining Time Indicator (pg. 36)
- 5 Child Lock Indicator (pg. 54)
- 6 S-VHS Indicator (pg. 35)
- 7 VCR Mode Indicator (pg. 36)
- 8 "Cassette Loaded" Mark
- 9 Channel Display ["L-1" and "F-1" for AUX model]
Counter Display (pg. 8)
Clock Display (pg. 8)

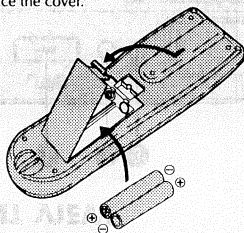
REMOTE CONTROL



Buttons with a small dot on the left side of the name can also be used to operate your TV while holding down the TV button. [pg. 51](#)

Installing Batteries

- 1 Open the battery compartment cover.
- 2 Insert 2 "AA"-size batteries (provided) in the direction indicated under the battery cover.
- 3 Replace the cover.



- 1 CABLE/DBS Button ([pg. 52, 53](#))
- 2 TV Button ([pg. 51](#))
- 3 TV/VCR Button ([pg. 34](#))
- 4 Instant REVIEW Button ([pg. 27](#))
- 5 NUMBER Buttons ([pg. 23, 38](#))
- 6 DBS Button ([pg. 43](#))
- 7 CANCEL Button ([pg. 44](#))
- 8 Counter [C.] RESET Button ([pg. 27](#))
- 9 STOP +/- Button ([pg. 42](#))
- 10 START +/- Button ([pg. 42](#))
- 11 PROG. Button ([pg. 38, 42](#))
- 12 PROG. CHECK Button ([pg. 44](#))
- 13 Rewind [REW] Button ([pg. 22](#))
- 14 Record [REC] Button ([pg. 23](#))
- 15 STOP Button ([pg. 22](#))
- 16 MENU Button ([pg. 10](#))
- 17 SHUTTLE PLUS $\Delta \nabla$ Button ([pg. 10](#))
- 18 TV Channel [CH] +/- Button ([pg. 51, 52, 53](#))
- 19 MBR SET Button ([pg. 51, 52, 53](#))
- 20 A/B Code Button ([pg. 54](#))
- 21 POWER On/Off Button ([pg. 10](#))
- 22 ENTER Button ([pg. 23](#))
- 23 On-Screen Display [OSD] Button ([pg. 28](#))
- 24 DISPLAY Button ([pg. 27](#))
- 25 DAILY Timer Recording Button ([pg. 39, 43](#))
- 26 WEEKLY Timer Recording Button ([pg. 39, 43](#))
- 27 "AUX" Mode Select Button ([pg. 48](#))
- 28 TIMER Button ([pg. 39, 43](#))
- 29 DATE +/- Button ([pg. 42](#))
- 30 Channel [CH] +/- Button ([pg. 23, 43](#))
- 31 SKIP SEARCH Button ([pg. 25, 30](#))
- 32 Recording Speed [SP/EP] Button ([pg. 23](#))
- 33 PLAY Button ([pg. 22](#))
- 34 Fast-Forward [FF] Button ([pg. 22](#))
- 35 PAUSE Button ([pg. 24](#))
- 36 OK Button ([pg. 10](#))
- 37 SHUTTLE PLUS $\leftarrow \rightarrow$ Button ([pg. 24, 25](#))
- 38 TV Volume [VOL.] +/- Button ([pg. 51](#))

How To Use

The remote control can operate most of your VCR's functions.

- 1 Point the remote control toward the sensor window. ([pg. 60](#))
- 2 Press the appropriate operation button.
- 3 The maximum operating distance of the remote control is about 8 m.

NOTES:

- This remote control can also operate various brands of TVs, Cable Boxes and DBS Receivers. For instructions, [pg. 51 - 53](#).
- If the remote control doesn't work properly, remove its batteries, wait a short time, replace the batteries and then try again.

SPECIFICATIONS

GENERAL

Power requirement	: AC 120 V~, 60 Hz
Power consumption	
Power on	: 28 W
Power off	: 3 W
Temperature	
Operating	: 5°C to 40°C (41°F to 104°F)
Storage	: -20°C to 60°C (-4°F to 140°F)
Operating position	: Horizontal only
Dimensions (W x H x D)	: 401 x 94 x 340 mm (15-13/16" x 3-3/4" x 13-7/16")
Weight	: 3.8 kg (8.4 lbs)
Format	: S-VHS/VHS NTSC standard
Maximum recording time	
SP	: 210 min. with ST-210 video cassette
EP	: 630 min. with ST-210 video cassette

VIDEO/AUDIO

Signal system	: NTSC-type color signal and EIA monochrome signal, 525 lines/60 fields
Recording/Playback system	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB
Horizontal resolution	: 240 lines (VHS) 400 lines (S-VHS)
Frequency range	
Normal audio	: 70 Hz to 10,000 Hz
Hi-Fi audio	: 20 Hz to 20,000 Hz
Input/Output	: RCA connectors (IN x 2, OUT x 1) S-Video connectors (IN x 1, OUT x 1)

TUNER

Tuning system	: Frequency-synthesized tuner
Channel coverage	
VHF	: Channels 2-13
UHF	: Channels 14-69
CATV	: 113 Channels
RF output	: Channel 3 or 4 (switchable; preset to Channel 3 when shipped) 75 ohms, unbalanced

TIMER

Clock reference	: Quartz
Program capacity	: 1-year programmable timer/8 programs
Memory backup time	: Approx. 10 min.

ACCESSORIES

Provided accessories	: RF cable (F-type), Infrared remote control unit, "AA" battery x 2, Audio/Video Cable, S-Video cable (4-pin), Controller
----------------------	--

Specifications shown are for SP mode unless otherwise specified.
E. & O.E. Design and specifications subject to change without notice.

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE: 1-800-252-5722

Dear customer:

In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, call 1-800-252-5722 for your authorized servicer. Remember to retain your Bill of Sale for Warranty Service.

— JVC

**JVC SERVICE & ENGINEERING
COMPANY OF AMERICA
DIVISION OF US JVC CORP.**

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(973) 808-9279

5665 Corporate Avenue
Cypress, CA 90630-4727
(714) 229-8011

230 Eliot Street
Ashland, MA 01721-2377
(508) 881-5923

1500 Lakes Parkway
Lawrenceville, GA 30243-5857
(770) 339-2522

10700 Hammerly Boulevard, Suite 110
Houston, TX 77043-2310
(713) 935-9331

8192 W State Road 84
Davie, FL 33324-4611
(954) 472-1960

705 Enterprise Street
Aurora, IL 60504-8135
(630) 851-7855

2969 Mapunapuna Place, Suite 101
Honolulu, HI 96819-2000
(808) 833-5828

890 Dubuque Avenue
South San Francisco, CA 94080-1804
(415) 871-2666

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

If you ship the product...

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.**CAUTION**

To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.
Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer.
Or from the 48 Continental United States call toll free:
1-800-882-2345.

LIMITED WARRANTY**CONSUMER VIDEO 1-90**

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period")

PARTS	LABOR
1 YR	90 DAYS

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY (50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800) 252-5722.

If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus a letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number.

If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

WHAT IS NOT COVERED:

This limited warranty provided by JVC does not cover:

1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
2. Initial installation and installation or removal for repair;
3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
5. Signal reception problems and failures due to line power surge;
6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus (Needle) are covered for 90 days from the date of purchase;
7. Accessories;
8. Batteries (except that Rechargeable Batteries are covered for 90 days from the date of purchase); from the date of purchase);

There are no other express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty lasts, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

JVC COMPANY OF AMERICA
DIVISION OF US JVC CORP.

41 Slater Drive
Elmwood Park, New Jersey 07407

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY, THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:

Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.: _____

Serial No.: _____

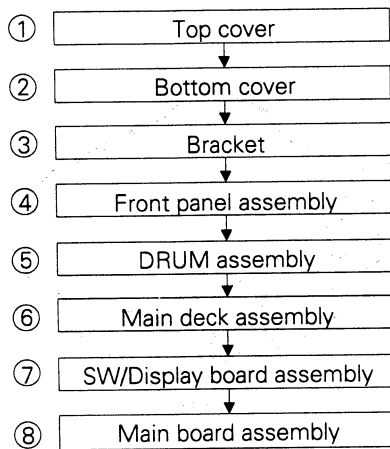
Purchase date: _____

Name of dealer: _____

SECTION 1 DISASSEMBLY

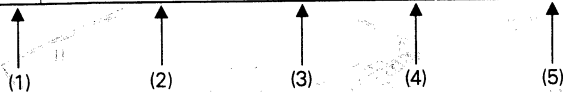
1.1 DISASSEMBLY FLOW CHART

This flowchart lists the disassembling steps for the cabinet parts and P.C. boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in reverse order. Bend, route and dress the flat cables as they were originally laid.



1.2 HOW TO READ THE DISASSEMBLY AND ASSEMBLY

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	3(S1)	<NOTE 1>
②	BRACKET	D2	2(S2)	
③	FRONT PANEL ASSEMBLY	D3	7(L1)	<NOTE 2> <NOTE 3>



- (1) Order of steps in Procedure
When reassembling, perform the step(s) in the reverse order. These numbers are also used as the identification (location) NO. of parts Figures.
- (2) Part name to be removed or installed.
- (3) Fig.No. showing procedure or part location
- (4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered. P = Spring, W = Washer, S = Screw, L = Locking tab, * = Unhook, unlock, release, unplug or unsolder.
- (5) Adjustment information for installation

1.3 DISASSEMBLY/ASSEMBLY METHOD

STEP /LOC NO.	PART NAME	FIG. NO.	POINT	NOTE
①	TOP COVER	D1	4(S1), (S2)	
②	BOTTOM COVER	D2	(S3), 7(L1)	
③	BRACKET	D3	2(S4)	
④	FRONT PANEL ASSEMBLY	D4	7(L2), WR1 *CN3006	<NOTE 1>
⑤	DRUM ASSEMBLY	D5	3(S5), CN1, WR2, WR3 INERTIA PLATE 4(L3), ROLLER ARM ASSEMBLY (L4), (P1)	<NOTE 2>
⑥	MAIN DECK ASSEMBLY	D6	2(S6), 2(S7), WR4 2(L5), *CN4001	<NOTE 3>
⑦	SW/DISPLAY BOARD ASSEMBLY	D7	7(L6), *CN7001, CN7191, REC SAFETY BOARD (L7)	<NOTE 4>
⑧	MAIN BOARD ASSEMBLY	D8	2(S8), (L8)	

<NOTE1>

- Before attaching the Front panel assembly, ensure that the door opener Ⓐ is in the lowered position.
- When inserting the flat wire into the connector, be careful not to mistake the positioning of its electrodes.

<NOTE2>

- When inserting the flat wire into the connector, be careful not to mistake the positioning of its electrodes.

<NOTE3>

- When it is required to remove the screws (S6) retaining the Main deck assembly, please refer to the "Procedures for Lowering the Cassette holder assembly" (See on pages 1-3).
- The Main deck assembly is also retained by two spacers on the Main board. Therefore, to remove the Main deck assembly, insert radio pliers or a similar tool from the main deck side and pinch the two hooks of the spacers while removing.
- When attaching the Main deck assembly, be careful not to damage the sensors and switches on the Main board (D3001: LED, Q3001: Start sensor, Q3002: End sensor S3001: S tape detect switch).

<NOTE4>

- The REC safety board assembly is attached to the SW/Display board assembly. It is therefore necessary to remove the REC safety board assembly before removing the SW/Display board assembly.
- When inserting the flat wire into the connector, be careful not to mistake the positioning of its electrodes.

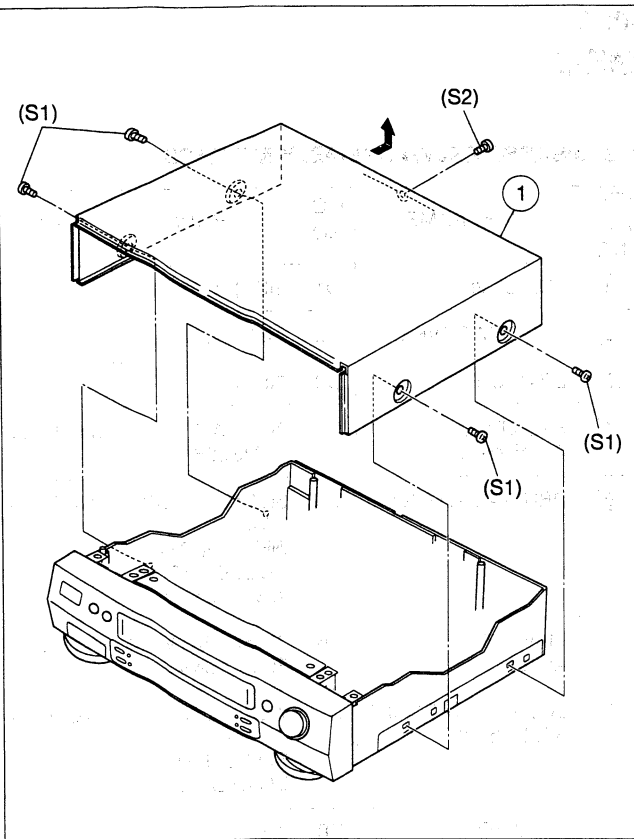


Fig. D1

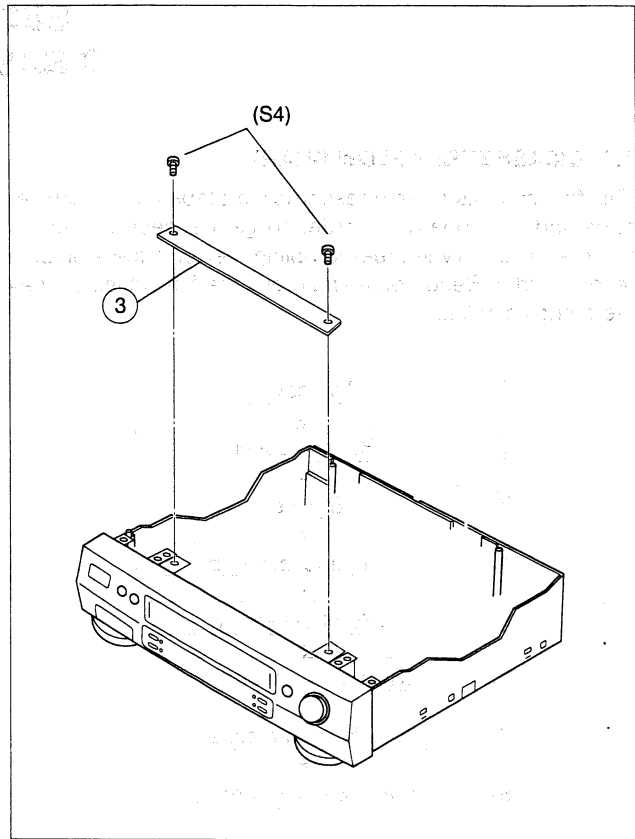


Fig. D3

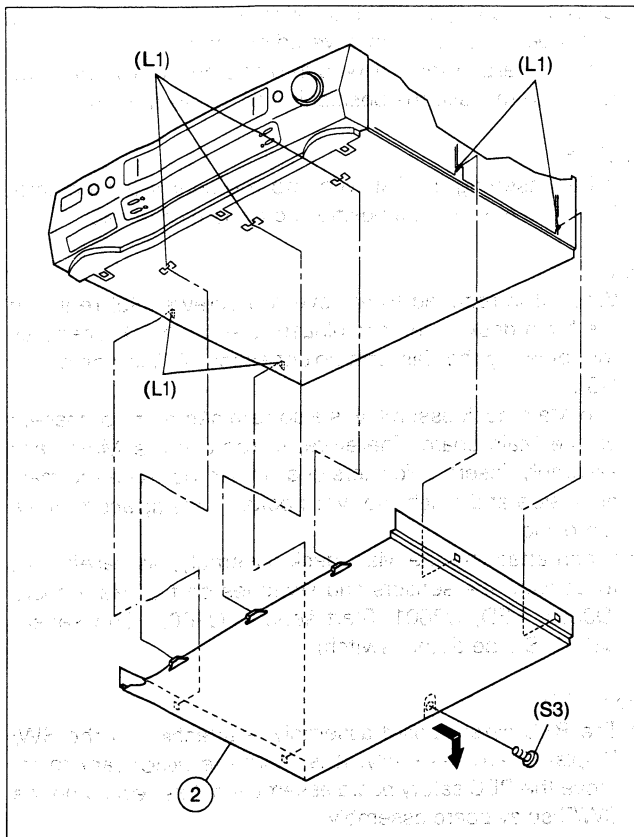


Fig. D2

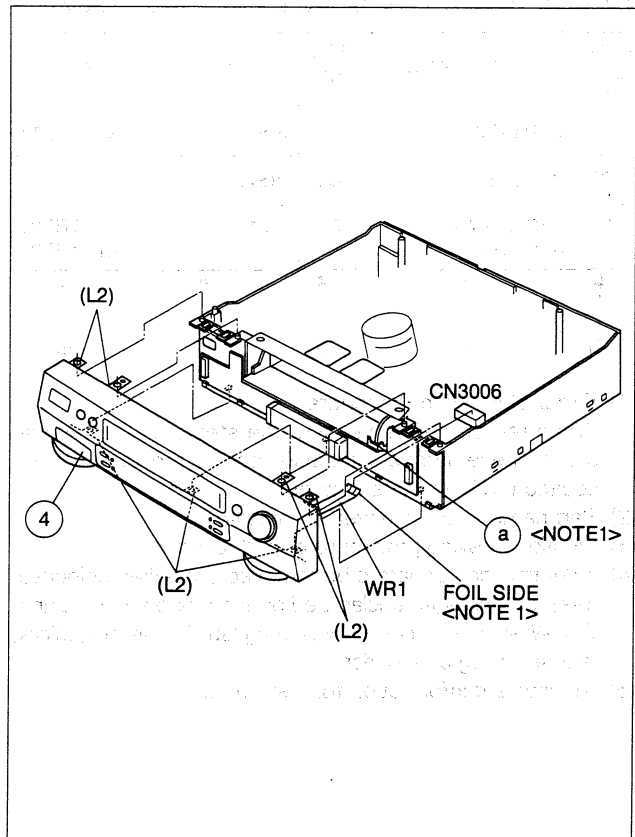


Fig. D4

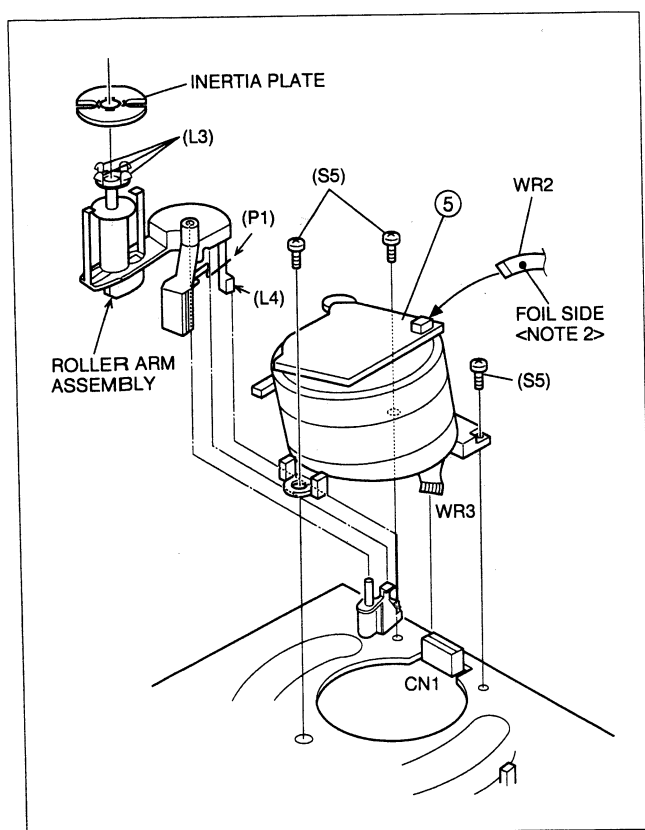


Fig. D5

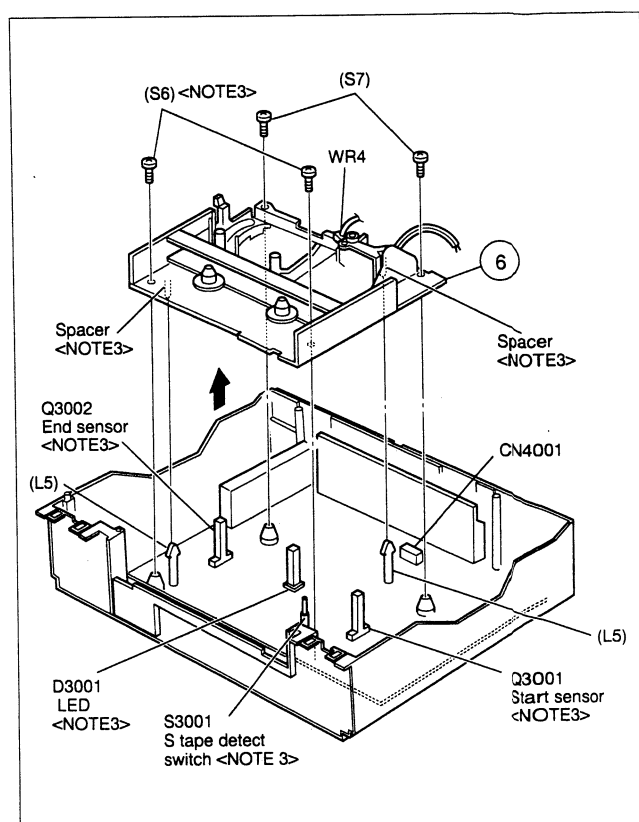


Fig. D6

Procedures for Lowering the Cassette holder assembly

As the mechanism of this unit is integrated with the Housing assembly, the holder must be lowered and the two bolts unscrewed when removing the Main deck assembly.

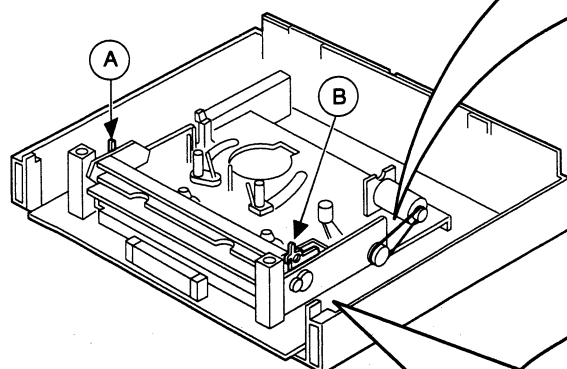


Fig. 1

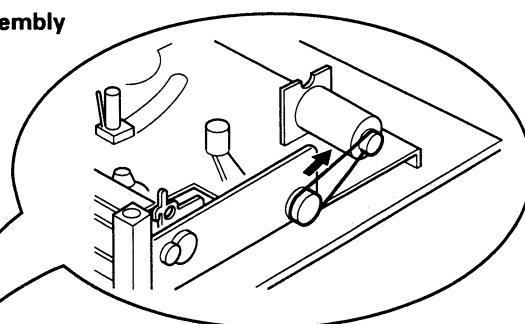


Fig. 2

Turn the loading motor pulley in the direction as indicated by Fig.2. As both (A) and (B) levers are lodged twice, push the levers in the direction as indicated by Fig.3 to release them. When pushing the levers, do it in the order of (A)(B)(B)(A). When the holder has been lowered, turn the pulley until the cassette holder is securely in place without allowing any up/down movement.

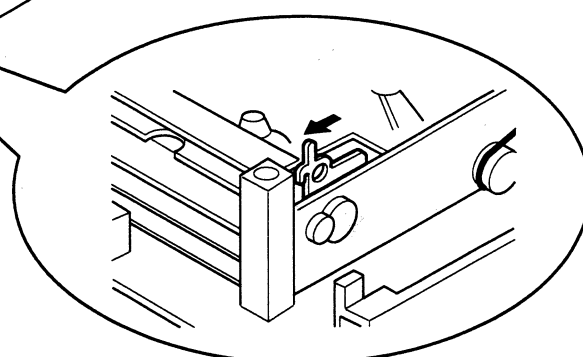


Fig. 3

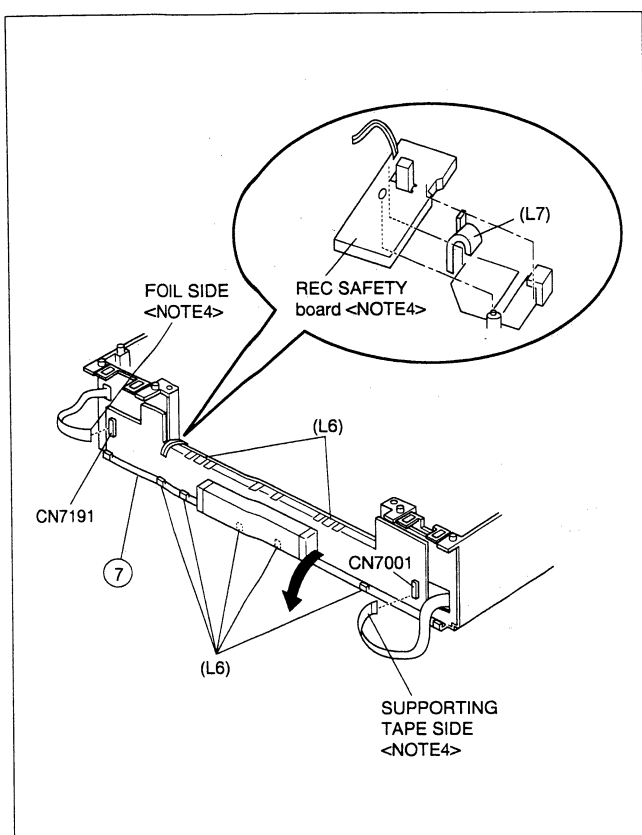


Fig. D7

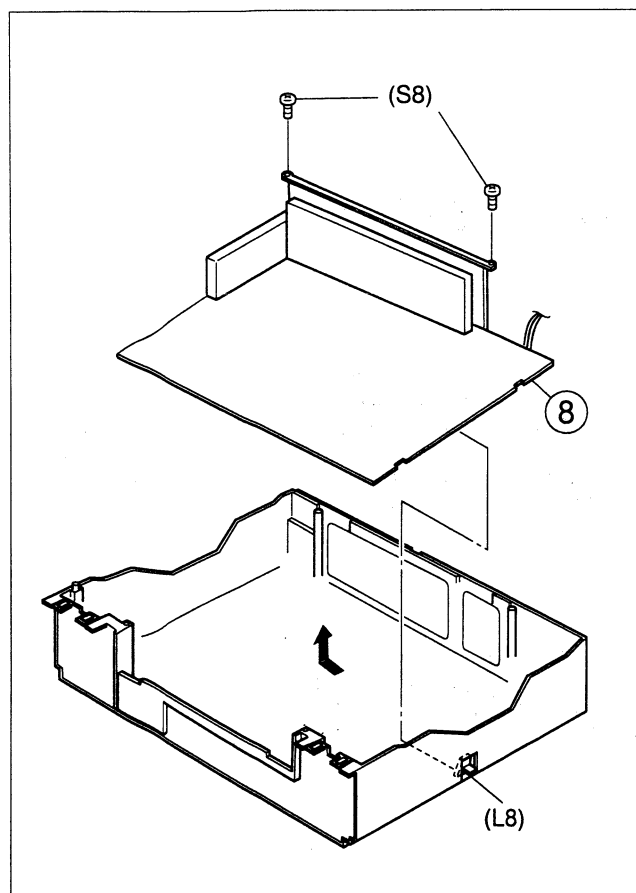


Fig. D8

1.4 SERVICE POSITION

In order to facilitate diagnosis and the repair of the Main deck assembly, this unit is constructed so as to allow the Main deck and the Main board assemblies to be removed together from the Chassis assembly.

1.4.1 How to take out the Mechanism and Main board assemblies

- (1) Remove the Top cover, Bracket and Front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
- (2) Lower the cassette holder, and make the preparations required in order to remove the screws from the Main deck assembly. (Refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
- (3) Take out 2 screws (A) and 2 screws (B) as shown in Fig. 1-4-1.
- (4) Remove the flat wires from CN2 and CN3005 on the Main board assembly.

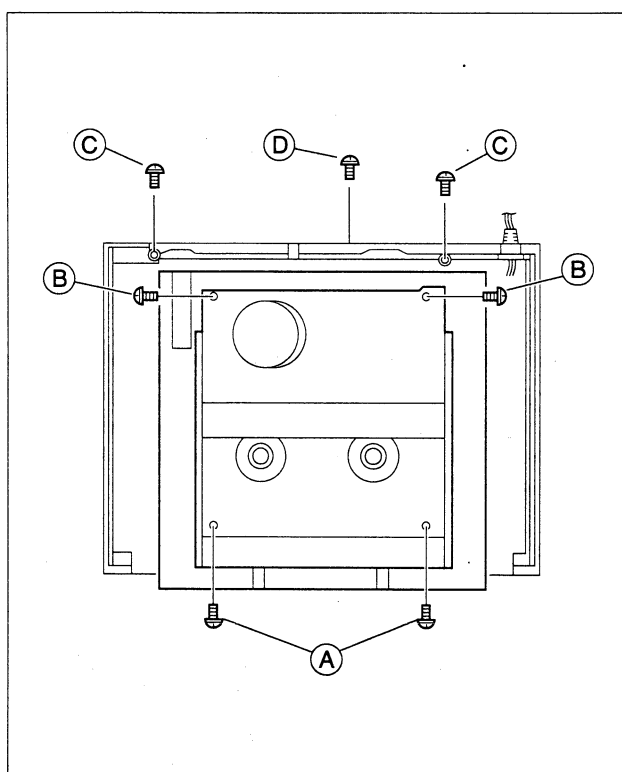


Fig. 1-4-1

- (5) Take out 2 screws (C) and take out 1 screw (D) to install the Bottom cover (See Fig. 1-4-1).
- (6) Remove the hook (E) while holding the edge of the Main board assembly, and remove the Main board and Main deck assemblies together. At this stage be careful of the power cord and prongs of the jacks on the back side (See Fig. 1-4-2).
- (7) Remove the SW/Display board assembly and the REC safety board (See 1.3 DISASSEMBLY/ASSEMBLY METHOD), then place them on the front side of the Main deck assembly and the Main board assembly which have been disassembled by procedure (6), and insert the flat wires into CN2 and CN3005 of the Main board (see Fig. 1-4-3).

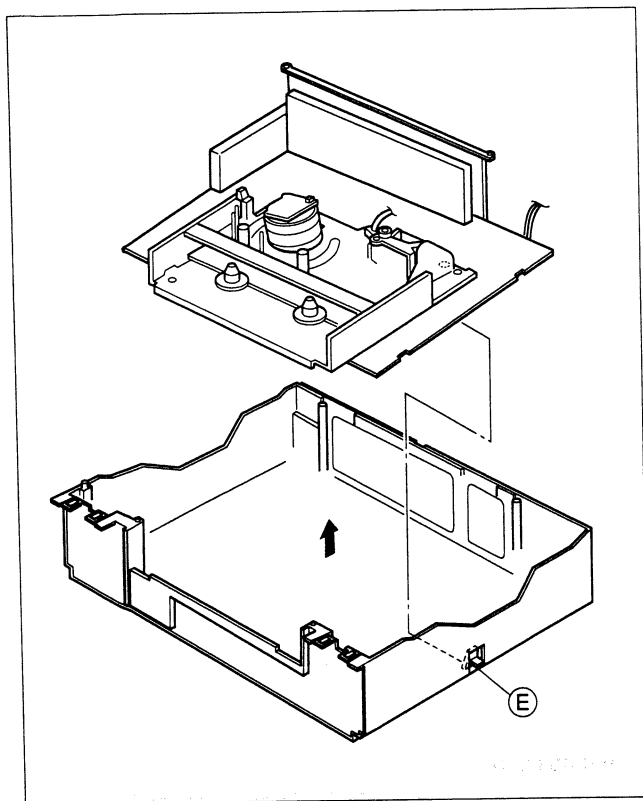


Fig. 1-4-2

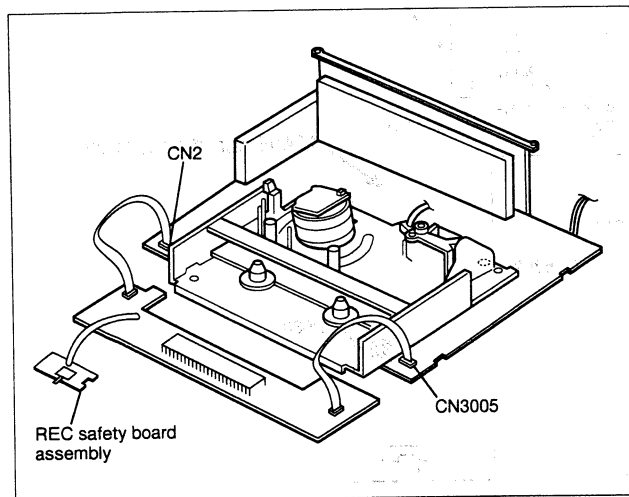


Fig. 1-4-3

1.4.2 Precautions for cassette loading in the "SERVICE POSITION"

The REC safety board assembly detects cassette loading as well as cassette tabs. Therefore, after the assembly has been removed in the "SERVICE POSITION", it is required to set the switch manually on the REC safety board assembly when a cassette is loaded.

1.4.3 Cassette loading and ejection methods in the "SERVICE POSITION" (See Fig. 1-4-3).

- (1) Insert a cassette halfway in the Cassette holder assembly.
- (2) Set the switch on the REC safety board assembly to ON (by pressing the switch).
- (3) As soon as the cassette starts to be loaded, set the switch on the REC safety board assembly to OFF (by releasing the switch).
- (4) Now the desired operation (recording, playback, fast forward, rewind, etc.) is possible in this status (the status shown in Fig.1-4-3).

NOTES: • When performing diagnostics of the tape playback or the recording condition in the "SERVICE POSITION", enter the desired mode before turning the set upside down, and do not change the mode when performing diagnostics while the set is placed upside down. If you want to switch the mode, turn the set to the normal position (the status shown in Fig.1-4-3).

• In the "SERVICE POSITION", the cassette tabs cannot be detected and recording becomes possible even with a cassette with broken tabs such as the alignment tape. Be very careful not to erase important tapes.

- (5) The switch on the REC safety board assembly does not have to be operated when ejecting a tape. But be sure to turn the set to the normal position before ejecting the tape.

- (8) Plug the power cord into an AC outlet, and lift the cassette holder.
(Before turning on the power make sure that there is nothing which may produce a short circuit, such as faulty soldering.)

1.5 MECHANISM SERVICE MODE

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "MECHANISM SERVICE MODE".

1.5.1 How to set the "MECHANISM SERVICE MODE"

- (1) Unplug the power cord from an AC outlet.
- (2) Connect TPGND and TP7001 (TEST) on the SW/Display board assembly using a jumper wire.
- (3) Plug the power cord into an AC outlet.
- (4) Set the power switch to ON.
- (5) With lock levers (A)(B) on the left and right sides of the Cassette holder assembly are pulled toward the front, slide the holder in the same direction as the cassette insertion direction. (For the positions of lock levers (A)(B), refer to the "Procedures for Lowering the Cassette holder assembly" on pages 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD.)
- (6) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.

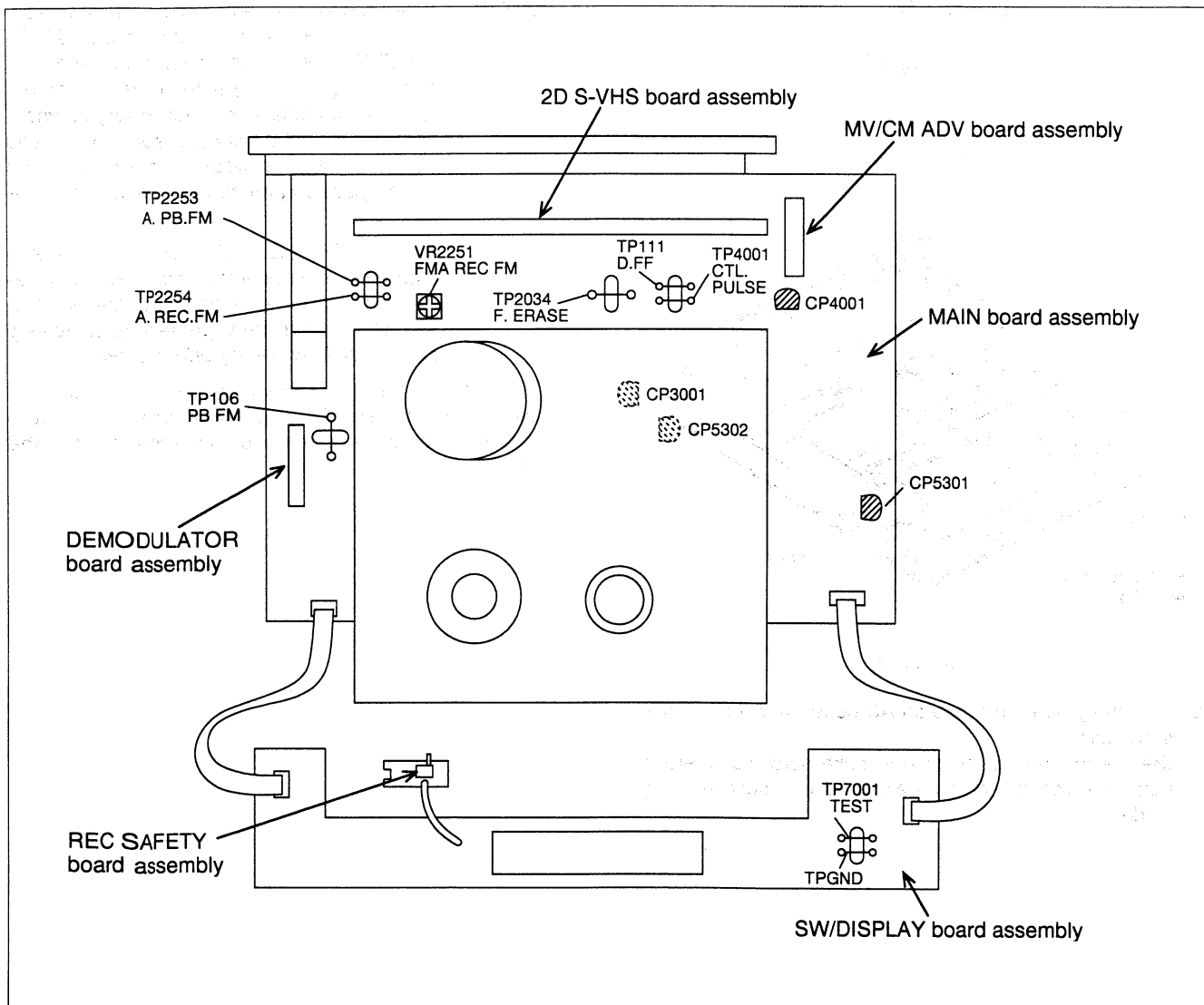


Fig. 1-5-1

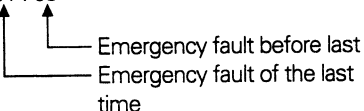
1.6 EMERGENCY DISPLAY FUNCTION

This product has the function to store the last two previous emergency faults which can be displayed in the FDP when servicing.

1.6.1 How to display record of an emergency faults

Note: Put the unit into A mode by using the VCR remote control. (When it is in B mode, the preset remote control codes are not accepted.)

- (1) Press "N" button of the presetting unit more than 2 seconds and the two previous emergency faults are shown in the LED or FDP.
- (2) Press "N" button of the presetting unit again to return to the normal mode.

[Example] E : 01 : 03


[Example] E : — : — ← No record of emergency

1.6.3 How to clear emergency record

Press the COUNTER RESET button on the remote controller in the emergency record display mode, and the record of the emergency fault(s) is cleared.

1.6.2 Detail of emergency faults

EMG DATA	Symptom	Detect mode	Resulting mode
E : 01	Loading motor rotates for more than 8 Sec without shift to next mode.	Loading	POWER OFF
E : 02	Loading motor rotates for more than 8 Sec without shift to next mode.	Unloading	POWER OFF
E : 03	TU REEL FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	POWER OFF
E : 04	DRUM FF input is absent. (for more than 3 Sec)	REC/PLAY SEARCH FF/SEARCH REW	POWER OFF
E : 06	CAPSTAN FG input is absent. (for more than 4 Sec)	REC/PLAY/FF/REW SEARCH FF/SEARCH REW	POWER OFF
E : 07	No SWD5V/12V	POWER ON	POWER OFF

Table 1-6-1 EMERGENCY FAULTS

1.7 SYSCON CIRCUIT

1.7.1 Syscon CPU pin function (IC3001) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	IND(L)	IN	AUDIO INPUT(LCH) FOR THE FDP AUDIO INDICATOR
2	IND(R)	IN	AUDIO INPUT(RCH) FOR THE FDP AUDIO INDICATOR
3	POWER DOWN	IN	DETECTION SIGNAL FOR POWER DOWN
4	INDEX	IN/OUT	DETECTION SIGNAL FOR SERVO INDEX
5	AVSS	-	GND FOR ANALOG CIRCUIT
6	TEST	-	GND
7	X2	-	TIMER CLOCK (32.768KHZ)
8	X1	-	TIMER CLOCK (32.768KHZ)
9	VSS	-	GND
10	OSC1	-	MAIN SYSTEM CLOCK (10MHZ)
11	OSC2	-	MAIN SYSTEM CLOCK (10MHZ)
12	RESET	-	RESET TERMINAL (RESET ON:L)
13	(NMI)	-	NC
14	BIL.SEL	-	NC
15	A EVENT DET	IN	BLANK AUDIO DETECT (DETECT ON:L) <MOVIE ADVANCE>
16	V.EVENT DET	IN	BLANK VIDEO DETECT (DETECT ON:L) <MOVIE ADVANCE>
17	FRONT (L)	OUT	SELECT SIGNAL FOR THE FRONT INPUT
18	BS P.CTL	-	NC
19	REAR(L)	-	NC
20	CONV.CTL	OUT	ON/OFF CONTROL SIGNAL FOR THE RF CONVERTER
21	CM_AD(L)	-	NC
22	ASKCTL	IN	CONTROL PULSE <MOVIE ADVANCE>
23	EV MASK	IN	EVENT LATCH PULSE <MOVIE ADVANCE>
24	A.EFFECT/J.CLOCK	-	NC
25	EDS(H)	OUT	EDS ON:H
26	TS BUSY	IN	BUSY SIGNAL ON THE BUS LINE FROM TIMER TO SUB
27	TS CS	OUT	CHIP SELECT SIGNAL ON THE BUS LINE FROM TIMER TO SUB
28	TM CLOCK	OUT	CLOCK SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
29	TM CS	OUT	CHIP SELECT SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
30	TM BUSY	IN	BUSY SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
31	TM DATA0	IN/OUT	DATA ON THE BUS LINE
32	TM DATA1	IN/OUT	DATA ON THE BUS LINE
33	TM DATA2	IN/OUT	DATA ON THE BUS LINE
34	TM DATA3	IN/OUT	DATA ON THE BUS LINE
35	TM DATA4	IN/OUT	DATA ON THE BUS LINE
36	TM DATA5	IN/OUT	DATA ON THE BUS LINE
37	TM DATA6	IN/OUT	DATA ON THE BUS LINE
38	TM DATA7	IN/OUT	DATA ON THE BUS LINE
39	H.REC(H)	OUT	HIFI AUDIO REC MODE CONTROL SIGNAL (REC:H)
40	N.REC(H)	OUT	NORMAL AUDIO REC MODE CONTROL SIGNAL(REC:H)

Table 1-7-1 SYSCON CPU pin function(1/2)

1.7.2 Syscon CPU pin function (IC3001) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	MS_RESET	OUT	RESET SIGNAL FOR THE MECHANISM CONTROL IC(IC3301)
42	CNR_ON(H)	OUT	CNR ON SIGNAL(ON:H)
43	TU DATA	OUT	TUNING DATA
44	TU_MUTE(H)	OUT	TUNER MUTE SIGNAL (MUTE:H)
45	REMOCON	-	NC
46	TU CE	OUT	CHIP ENABLE OF THE TUNER UNIT
47	TU CLOCK	OUT	CLOCK FOR DATA TRANSFER TO THE TUNER UNIT
48	RF_CH_SEL	-	NC
49	COMPU OUT	OUT	A/V COMPULINK OUTPUT
50	RCIN	IN	DATA INPUT OF THE REMOTE CONTROL UNIT
51	R.PAUSE	IN	REMOTE PAUSE CONTROL
52	CHUPDN(H)/FULL_E_ON	-	NC
53	HOLD(H)/V.SYNC/INSERT(L)	IN	INPUT FOR V.SYNC
54	CS2	OUT	ON SCREEN WITH EDS CHIP SELECT
55	A.MUTE(H)	OUT	AUDIO MUTE CONTROL (MUTE:H)
56	OSD CS	OUT	CHIP SELECT FOR THE ON-SCREEN IC
57	S2-OUT	OUT	SERIAL DATA TRANSFER OUTPUT FROM THE FDP DRIVER TO THE ON-SCREEN IC
58	S2-IN	IN	SERIAL DATA TRANSFER OUTPUT FROM THE ON-SCREEN IC TO FDP DRIVER
59	S2-CLK	OUT	SERIAL DATA TRANSMISSION CLOCK FROM THE FDP DRIVER TO THE ON-SCREEN IC
60	TITLE_REC	-	NC
61	STB	OUT	PERMISSION SIGNAL FOR CLOCK OUTPUT (STROBE SIGNAL)
62	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE:L)
63	VCC	-	SYSTEM POWER
64	SQREC(L)	OUT	S-VHS ET REC MODE CONTROL (REC:L)
65	LBX(H)/CARR	OUT	CARRIER OF THE CABLE BOX
66	LOCK(L)	IN	TUNING PLL LOCK DETECT:L
67	CTL_CLOCK	IN	LINEAR TIME COUNTER INPUT
68	BS_ANT.CTL	-	NC
69	I2C DATA	IN/OUT	SERIAL DATA TRANSFER OUTPUT FOR EE PROM
70	I2C CLOCK	IN/OUT	SERIAL DATA TRANSMISSION CLOCK FOR EE PROM
71	D.FF	IN	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
72	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
73	SHTLB	-	NC
74	SHTL(L)/SHTLA	-	NC
75	JSA	-	NC
76	JSB	-	NC
77	SYNC_DET	IN	DETECTION OF VIDEO SYNC SIGNAL (DETECTED:H)
78	WA DET/REC LEVEL V	IN	DETECTION OF WIDE ASPECT SWITCH
79	AFT	IN	"WITH THE TUNER RECEIVE, SYNCHRONIZE WITH CENTER (ANALOG VALUE:0-5V)"
80	TU LED	-	NC

Table 1-7-2 SYSCON CPU pin function(2/2)

1.7.3 Syscon CPU pin function (IC3301) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	A.ENV/ND(L)	IN	INPUT THE AVERAGE OF FMA PLAYBACK SIGNAL-A (AUTO TRACKING AND FMA NON-RECORD DETECTION)
2	VIDEO ENV	IN	AUTO TRACKING DETECT/INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL
3	6.5H DET	IN	6.5H DETECTION SIGNAL FOR SERVO CIRCUIT
4	REC SF	IN	DETECTION SIGNAL FOR REC SAFETY/CASSETTE INSERT SWITCH
5	AVSS	-	GND FOR ANALOG CIRCUIT
6	TEST	-	GND
7	X2	-	NC
8	X1	-	NC
9	VSS	-	GND
10	OSC1	-	MAIN SYSTEM CLOCK (10MHZ)
11	OSC2	-	MAIN SYSTEM CLOCK (10MHZ)
12	MS_RESET	-	RESET TERMINAL (RESET ON:L)
13	(NMI)	-	NC
14	LSC	IN	MECHANISM MODE DETECT SWITCH (C)
15	LSB	IN	MECHANISM MODE DETECT SWITCH (B)
16	LSA	IN	MECHANISM MODE DETECT SWITCH (A)
17	PAL DET	-	NC
18	E06	OUT	SWITCHING SIGNAL FOR CAPSTAN DRIVE VOLTAGE
19	S.SENS	IN	START SENSOR
20	E.SENS	IN	END SENSOR
21	I2C CLOCK	OUT	SERIAL DATA TRANSFER CLOCK FOR MEMORY IC
22	TU FG	IN	DETECTION SIGNAL FOR TAKE-UP REEL ROTATION/TAPE REMAIN
23	SUP FG	IN	DETECTION SIGNAL FOR SUPPLY REEL ROTATION/TAPE REMAIN
24	CTL CLOCK	IN	CONTROL PULSE INPUT
25	I2C DATA	IN/OUT	I/O DATA FOR MEMORY IC
26	LCM1	OUT	MODE MOTOR DRIVE CONTROL
27	LCM2	OUT	MODE MOTOR DRIVE CONTROL
28	LCM3	OUT	MODE MOTOR DRIVE CONTROL
29	TM CS	IN	CHIP SELECT SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
30	TM CLOCK	IN	CLOCK SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
31	SLOW P/PAL_EP_CTL	-	NC
32	LP SHORT(H)	-	NC
33	SP SHORT(H)	-	NC
34	TM DATA7	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
35	TM DATA6	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
36	TM DATA5	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
37	TM DATA4	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
38	TM DATA3	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
39	TM DATA2	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
40	TM DATA1	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL

Table 1-7-3 SYSCON CPU pin function(1/2)

1.7.4 Syscon CPU pin function (IC3301) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	TM DATA0	IN/OUT	DATA ON THE BUS LINE FROM TIMER TO M-CTL
42	TM BUSY	OUT	BUSY SIGNAL ON THE BUS LINE FROM TIMER TO M-CTL
43	N REC START(H)	OUT	NORMAL AUDIO SOUND RECORDING START
44	H REC START(L)	OUT	HIFI AUDIO SOUND RECORDING START
45	VPCTL	OUT	"V.PULSE CONTROL, V.COMPENSATION DURING SPECIAL PLAYBACK"
46	P.CTL(H)	OUT	CONTROL SIGNAL FOR SW POWER SUPPLY
47	EE(L)	OUT	EE/PB CONTROL (EE MODE:L)
48	FLY E ON(H)	-	NC
49	VSC CLOCK	-	NC
50	VSC DATA	-	NC
51	V.STB(L)/RY-REV(L)	-	NC
52	CTL C/D	IN	DETECTION SIGNAL FOR CONTROL PULSE MODE/TAPE RUNNING/BLANK
53	DDFG	-	NC
54	DDSPDCTL	-	NC
55	DDCREV	-	NC
56	DDCFWD	-	NC
57	VIDEO DATA	-	NC
58	SP(L)	OUT	SP MODE:L
59	VIDEO CLK	-	NC
60	DE EMPH CTL	-	NC
61	V.UP(H)	-	NC
62	TRICK	OUT	SPECIAL PLAYBACK:H
63	VCC	-	SYSTEM POWER
64	CONVERT(L)/SLOW_REV	-	NC
65	1/2_EP/3.58NTSC	-	NC
66	S_DATA	OUT	SERVO SERIAL DATA OUTPUT
67	CAP-REV(L)	OUT	CAPSTAN MOTOR REVERSE CONTROL (FWD:H/REV:L)
68	DUTY I/O	IN/OUT	DETECTION SIGNAL FOR INDEX DATA
69	CAP FG	IN	DETECTION SIGNAL FOR MODE/TAPE RUNNING/BLANK
70	PAUSE(L)	OUT	STOP CONTROL SIGNAL FOR CAPSTAN MOTOR
71	D.FF	IN	ROTATION DETECTION SIGNAL FOR DRUM MOTOR/TIMING CONTROL SIGNAL FOR REC
72	AVCC	-	SYSTEM POWER FOR ANALOG CIRCUIT
73	SCASS	IN	DETECTION SIGNAL FOR S-VHS CASSETTE
74	SB-G	OUT	VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE
75	DRUM V	OUT	VOLTAGE CONTROL SIGNAL FOR DRUM MOTOR DRIVE
76	CAP V	OUT	VOLTAGE CONTROL SIGNAL FOR CAPSTAN MOTOR SPEED
77	DD ABS	-	NC
78	S(H)	OUT	S-VHS MODE:H
79	HEAD.SEL	OUT	HEAD SELECT (EP HEAD:H/SP HEAD:L)
80	PROTECT	IN	DETECTION SIGNAL FOR SW POWER SUPPLY

Table 1-7-4 SYSCON CPU pin function(2/2)

SECTION 2 MECHANISM ADJUSTMENT

2.1 BEFORE STARTING REPAIR AND ADJUSTMENT

2.1.1 Precautions

- (1) Unplug the power cable of the main unit before using your soldering iron.
- (2) Take care not to cause any damage to the conductor wires when plugging and unplugging the connectors.
- (3) Do not randomly handle the parts without identifying where the trouble is.
- (4) Exercise enough care not to hurt yourself, especially your finger nails, during the repair work.
- (5) When installing the front panel assembly, be sure to hook the lug on the back side of cassette door to the door opener of the cassette holder. If this operation is neglected it will not be possible to remove the cassette when ejecting because the housing door cannot be opened.

2.1.2 Checking for Proper Mechanical Operations

Enter the mechanism service mode when you want to operate the mechanism when no cassette is loaded. (See 1.5 MECHANISM SERVICE MODE)

2.1.3 Manually Removing the Cassette Tape

1. In case of electrical failures

If you cannot remove the cassette tape which is loaded because of any electrical failure, manually remove it by taking the following steps.

- (1) Unplug the power cable and remove the top cover, bracket and front panel assembly. (See 1.3 DISASSEMBLY/ASSEMBLY METHOD)
- (2) Unload the cassette by manually turning the unloading motor of the main deck assembly toward the front. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.2-1-1)
- (3) Bring the pole base assembly (on the supply or take-up side) to a pause when it reaches the position where it is hidden behind the cassette tape.
- (4) Move the top plate toward the drum while holding down the lug **A** of the bracket retaining the top plate. Likewise hold part **B** down and remove the top plate. The spring plate **C** is then brought under the cassette lid. Then remove the top plate by pressing the whole cassette tape down. (Note 1) (See Fig.2-1-2).
- (5) Remove the cassette tape by holding both the slackened tape and the cassette lid.
- (6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

Note: The spring plate of the top plate is sharp-edged. Take care not to hurt yourself.

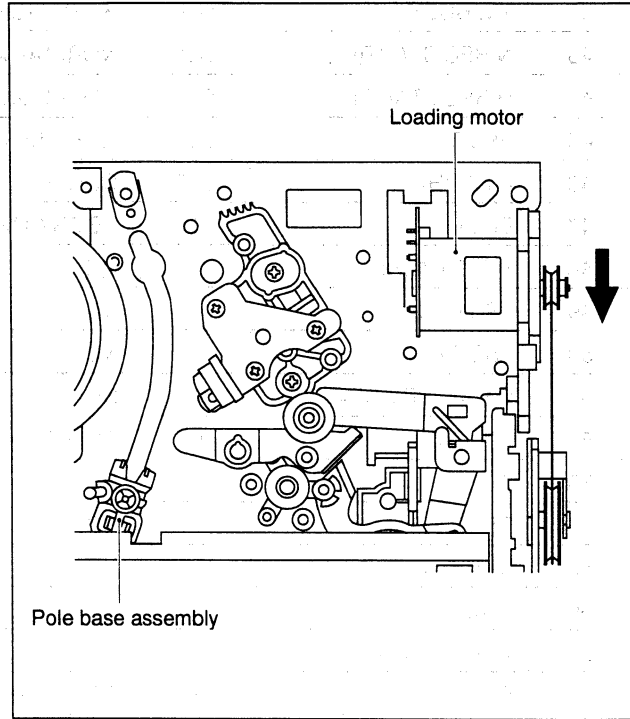


Fig. 2-1-1

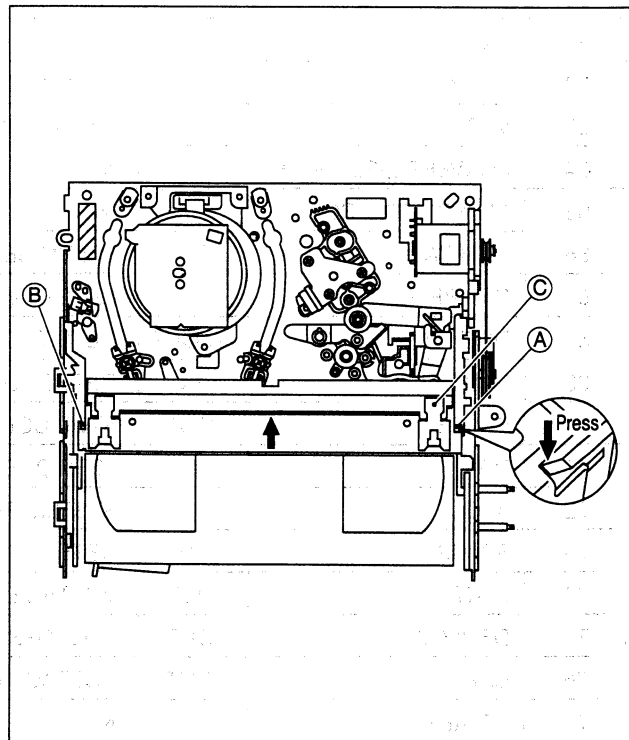


Fig. 2-1-2

2. In case of mechanical failure

If you cannot remove the cassette tape which is loaded because of any mechanical failure, manually remove it by taking the following steps.

- (1) Unplug the power cable and remove the top cover, bracket and front panel assembly (See 1.3 DISASSEMBLY/ASSEMBLY METHOD).
- (2) While keeping the tension arm of the main deck assembly free from tension, pull the tape on the pole base assembly out of the guide roller (on the supply or take-up side) (See Fig.2-1-3).
- (3) Remove the top plate as done in Step (4) of "1 In case of electrical failures" and remove the guide pole cap at the same time. (See Fig.2-1-4).
- (4) While lifting the cassette tape lid, hold the cassette tape case and pinch roller by the fingers and move them toward the loading motor to relieve pressure on the tape. Then remove the tape while taking the cassette case out of the cassette holder. (See Fig.2-1-4).
- (5) Re-place the guide pole cap and take up the slack of the tape into the cassette.

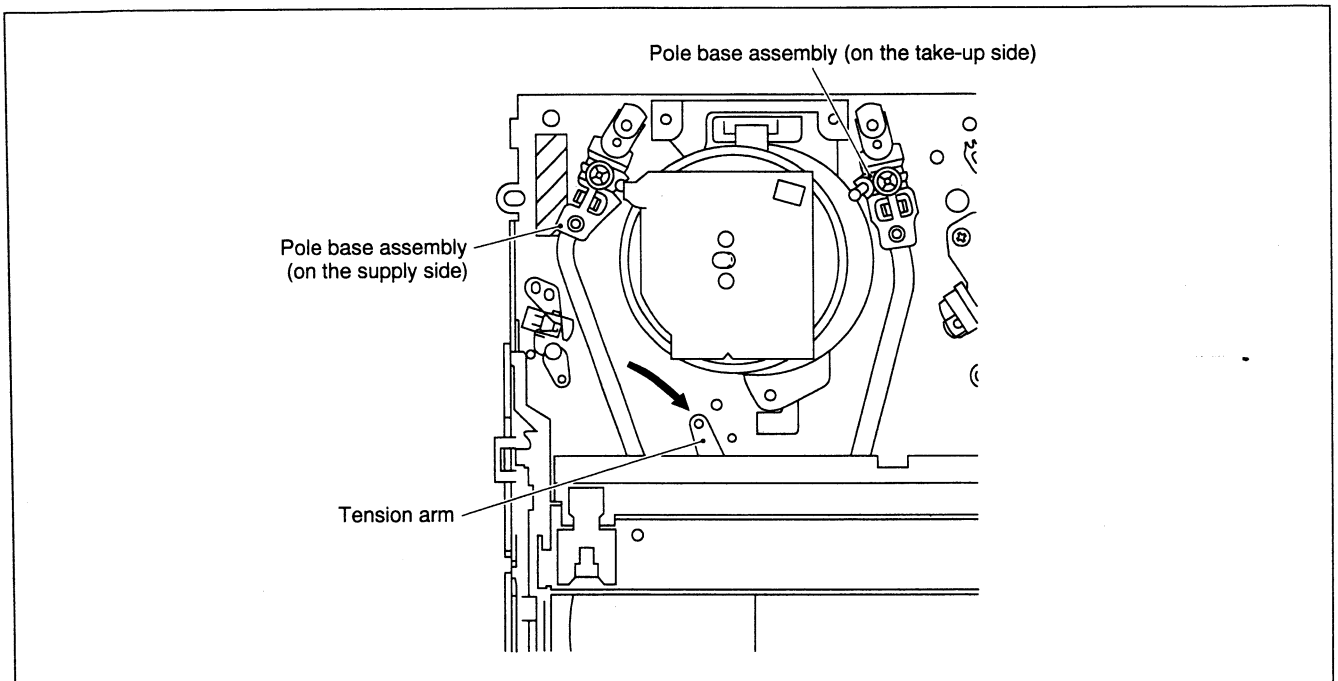


Fig. 2-1-3

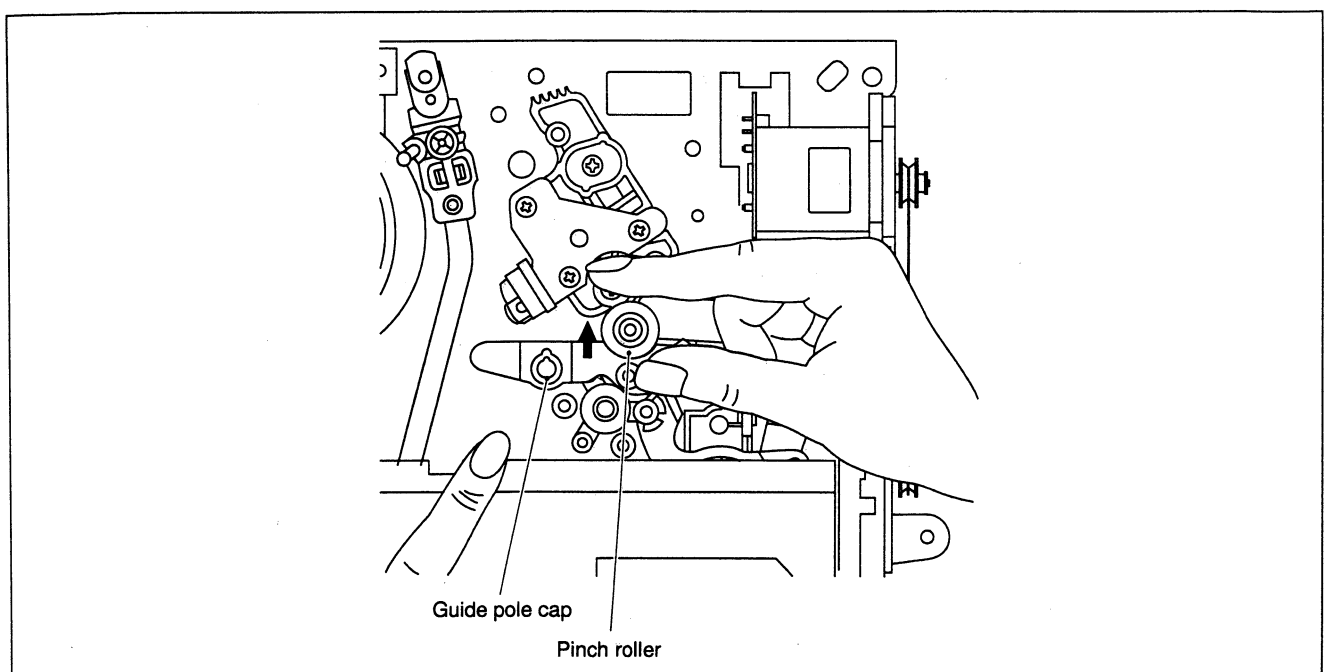


Fig. 2-1-4

2.1.4 Jigs and Tools Required for Adjustment

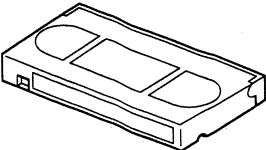
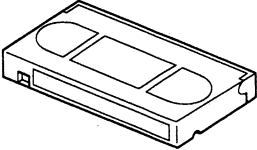
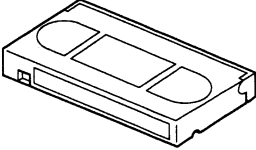
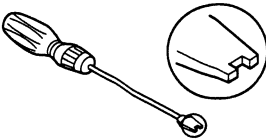
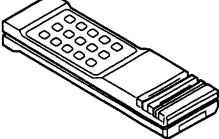
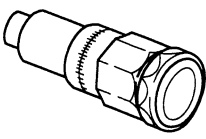
Alignment tape (SP) MHP	Alignment tape (EP) MHP-L	Back tension cassette gauge PUJ48076-2	A/C head position bit PTU94010
			
Roller driver PTU94002	Presetting unit PTU94008	Torque gauge PUJ48075-2	
			

Table 2-1-1 Jigs and tools required for adjustment

2.1.5 Maintenance and Inspection

1. Location of major mechanical parts

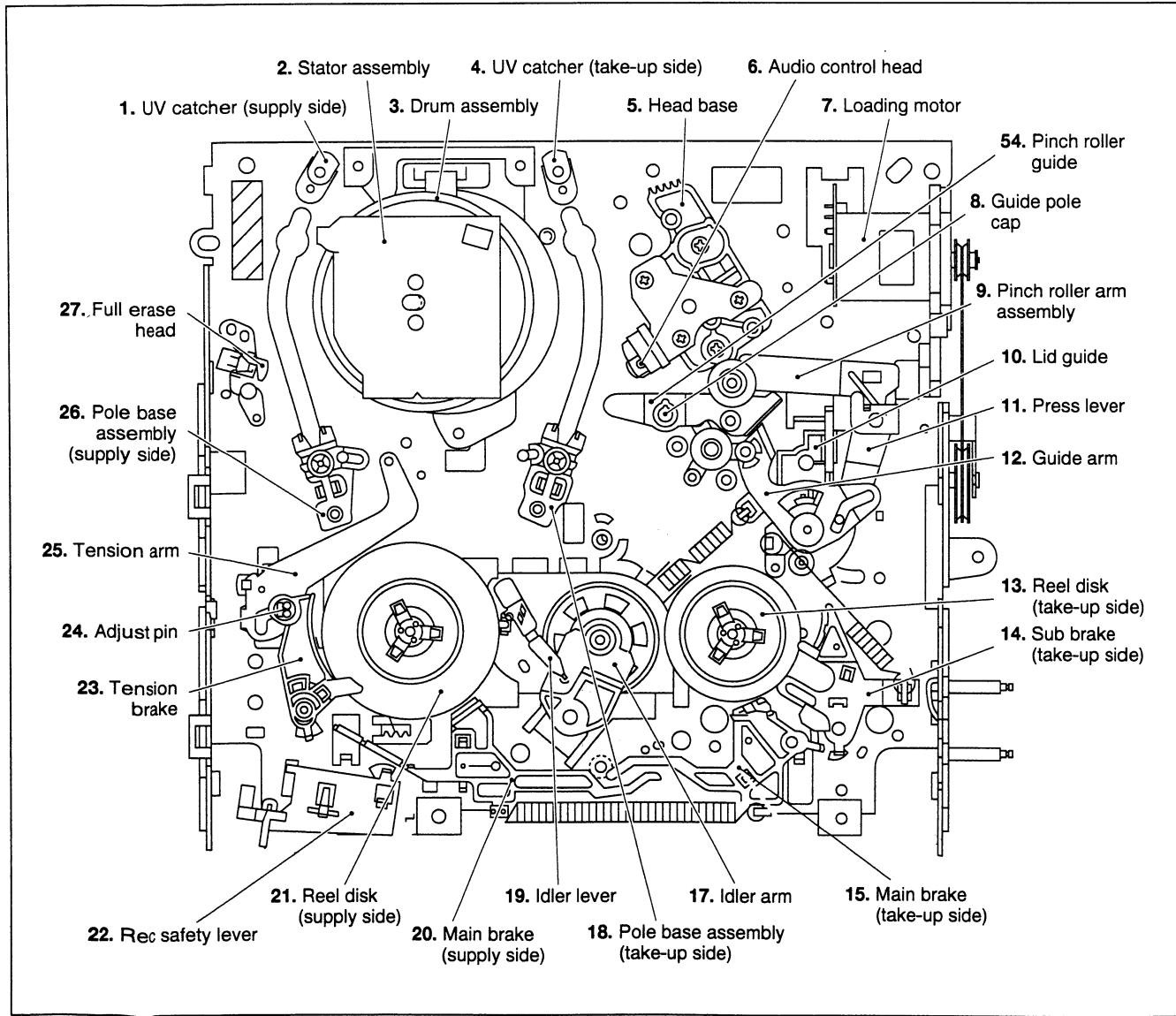


Fig. 2-1-5 Main deck top side

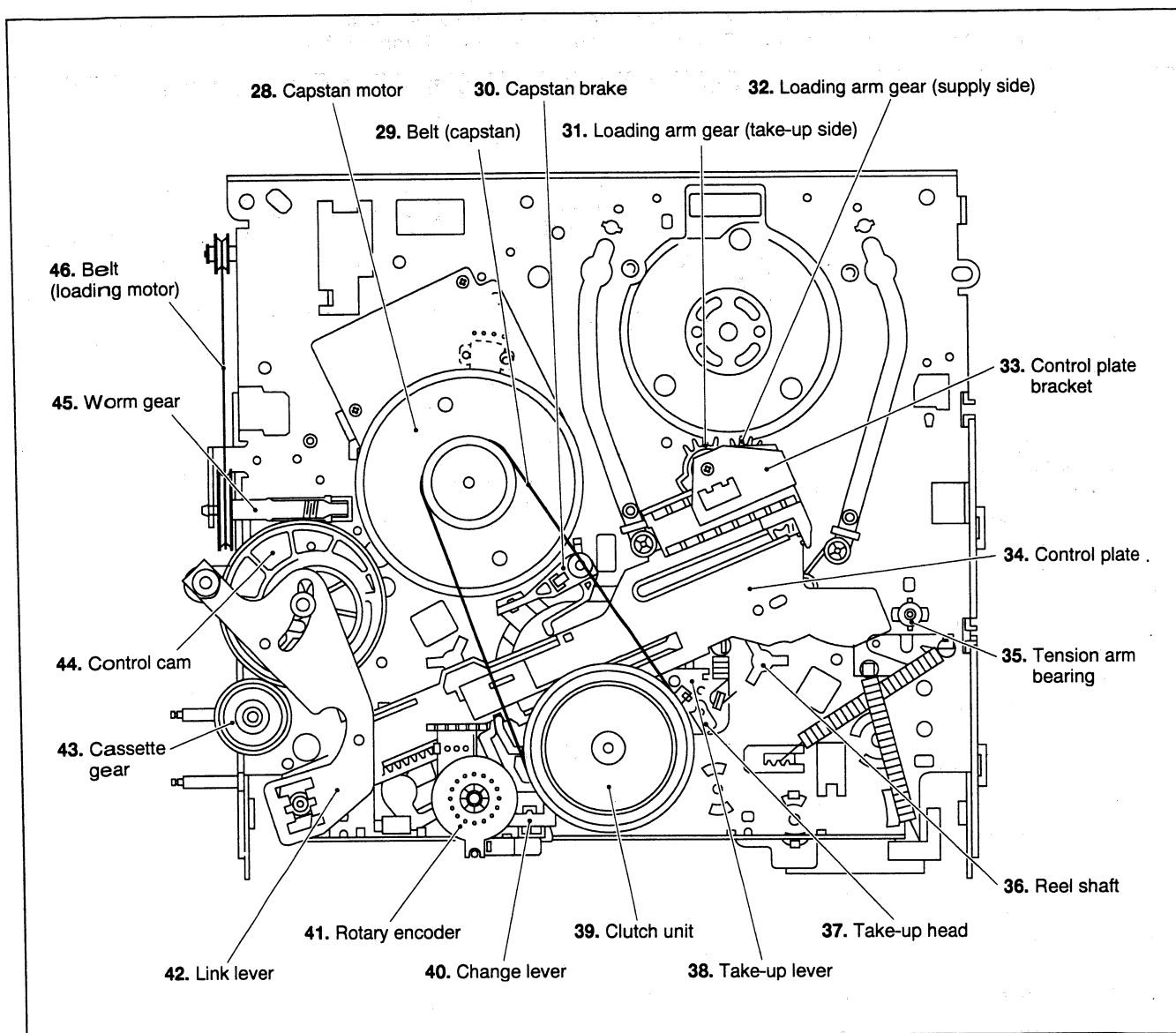


Fig. 2-1-6 Main deck bottom side

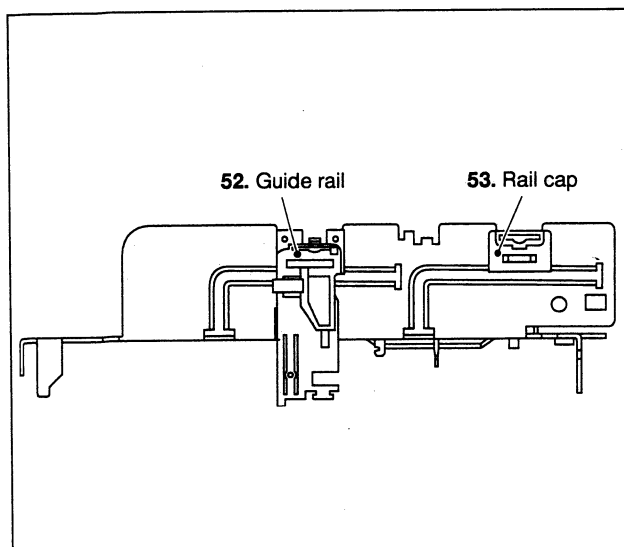


Fig. 2-1-7 Main deck left side

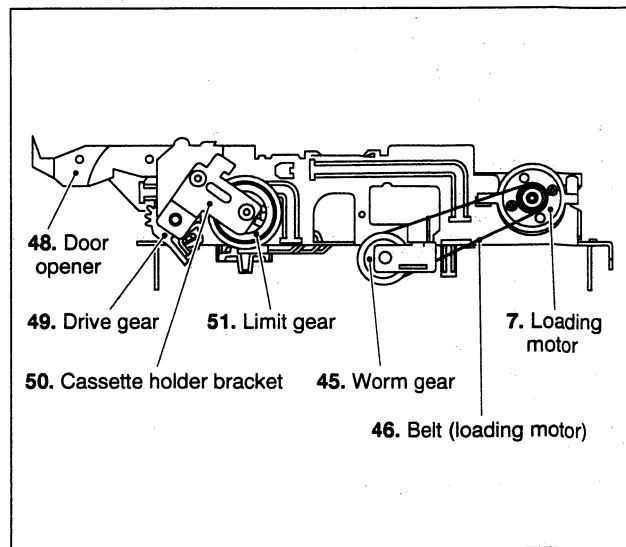


Fig. 2-1-8 Main deck right side

Note: Numerals at the start of the parts names are identical with those of the location diagrams of the major mechanical parts, 1 - 18 of which denote the order of removal. Of the alphabets T and B next to the parts names, T denotes removal from the main deck top side, B from the bottom side and T/B from both sides.

			1,4	12	53	46	9	52	11	50	-	-	-	49	32	-	-	38	25	23	31	21	42	41	29	39	40	33	34	14	19	54	
	Removable parts names		UV catcher	Guide arm assembly	Rail cap	Belt (loading motor)	Pinch roller arm assembly	Guide rail	Press lever assembly	Cassette Holder bracket	Opener guide	Relay gear	Cassette holder assembly	Drive gear	Loading arm gear (supply side)	Drive arm assembly	Tension spring	Take-up lever	Tension arm assembly	Tension brake assembly	Loading arm gear (take-up side)	Reel base (supply side)	Link lever	Rotary encoder	Belt (capstan motor)	Clutch unit	Change lever	Control plate bracket	Control plate	Sub brake	Idler lever	Pinch roller guide	
17	Idler arm	T			1			2		3	4	5	6	7		8					9		10	11	12	13	14	15	16	17		18	
15	Main brake (take-up side)	T/B			1			2		3	4	5	6	7		8								9	10	11	12	13	14	15	16		
13	Reel disk (take-up side)	T			1			2		3	4	5	6	7		8								9	10	11	12	13	14	15	16		
19	Idler lever	T/B			1			2		3	4	5	6	7		8					9		10	11	12	13	14	15	16	17			
-	Rotary encoder guide	T/B			1			2		3	4	5	6	7		8								9	10	11	12	13	14	15	16		
14	Sub brake (take-up side)	T/B			1			2		3	4	5	6	7		8								9	10	11	12	13	14	15			
-	Loading arm gear shaft	B													8							9	1	2	3	4	5	6	7				
35	Tension arm bearing	T			1			2		3	4	5	6				8			9	7												
-	Control plate guide	T/B																8						1	2	3	4	5	6	7			
37	Take-up head	B																8						1	2	3	4	5	6	7			
31	Loading arm gear (take-up side)	B													8									1	2	3	4	5	6	7			
25	Tension arm assembly	T/B			1			2		3	4	5	6				8				7												
20	Main brake (supply side)	T/B			1			2		3	4	5	6	7		8																	
38	Take-up lever	T/B																															
32	Loading arm gear (supply side)	B																						1	2	3	4	5	6	7			
21	Reel disk (supply side)	T			1			2		3	4	5	6	7																			
-	Drive arm assembly	T			1			2		3	4	5	6	7																			
30	Capstan brake	T/B																						1	2	3	4	5	6	7			
34	Control plate	B																						1	2	3	4	5	6				
23	Tension brake assembly	T/B			1			2		3	4	5	6																				
-	Cassette holder assembly	T			1			2		3	4	5																					
-	Direct gear	B																							1	2	3	4					
10	Lid guide	T		1			2		3																								
40	Change lever	B																							1	2	3						
49	Drive gear	T								1	2	3																					
11	Press lever assembly	T		1			2																										
-	Relay gear	T								1	2																						
51	Limit gear assembly	T								1	2																						
26	Pole base assembly (supply side)	T/B	1																														
18	Pole base assembly (take-up side)	T/B	1																														
-	Tension spring (Main brake)	T																															
22	Rec safety lever	T/B																															
28	Capstan motor	T/B																								1							2
45	Worm gear	B				1																											
44	Control cam	B																						1									
43	Cassette gear	B																						1									
39	Clutch unit	B																								1							
9	Pinch roller arm assembly	T		1																													
-	Opener guide	T								1																							
8	Guide pole cap	T																															
54	Pinch roller guide	T																															
1,4	UV catcher	T																															
42	Link lever	B																															
41	Rotary encoder	B																															
12	Guide arm assembly	T																															
50	Cassette holder bracket	T																															
52	Guide rail	T																															
53	Rail cap	T																															
7	Loading motor assembly	T																															
5	A/C head assembly	T																															

2. Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced.

When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

- (1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth or Kimu-wipe with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.

Note: *Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.*

- (2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.
- (3) After cleaning, make sure that the cleaned parts are completely dry before using the video tape.

3. Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

- (1) See the mechanism assembly and disassembly diagrams (M4) for the lubricating or greasing spots. See Table 2-1-2 for the types of oil or grease to be used.

Type	Name	Serial No.	Symbols on the dis-assembly diagrams
Grease	Maltemp SH-P	KYODO-SH-P	AA
Oil	Cosmohydro HV56	COSMO-HV56	BB

Table 2-1-2 Grease and oil used for the unit

4. Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation Hours	
		~1000H	~2000H
Tape transport	Upper drum assembly	★○	○
	A/C head	★○	★○
	Lower drum assembly	★	★○
	Pinch roller arm assembly	★	★
	Full erase head	★	★
	Tension arm assembly	★	★
	Capstan motor (Shaft)	★	★
	Guide arm assembly	★	★
Drive	Capstan motor		○
	Capstan brake		○
	Main brake		○
	Belt (Capstan)	○	○
	Belt (Loading motor)		○
	Loading motor		○
	Clutch unit		○
	Worm gear assembly		○
Other	Control plate		○
	Brush assembly	★○	★○
	Tension brake	○	○
	Rotary encoder		○

★: Cleaning

○: Inspection or Replacement if necessary

Table 2-1-3

2.2 REPLACEMENT OF MAJOR PARTS

2.2.1 Before Starting Disassembling

This unit is provided with a mechanism assembly mode. It is therefore necessary to enter this mode for assembling and disassembling procedures. This mode is usually not in use, manually set it when it is required.

2.2.2 How to Set the Mechanism Assembling Mode

Remove the main deck assembly and place it bottom side up. (See SECTION 1 DISASSEMBLY). Turn the worm gear toward the front so that the register hole of the control cam is brought into alignment with the hole at the main deck assembly chassis. This position renders the mechanism assembling mode operational. Make sure that the control plate is located in alignment with the mark E. (See Fig.2-2-1)

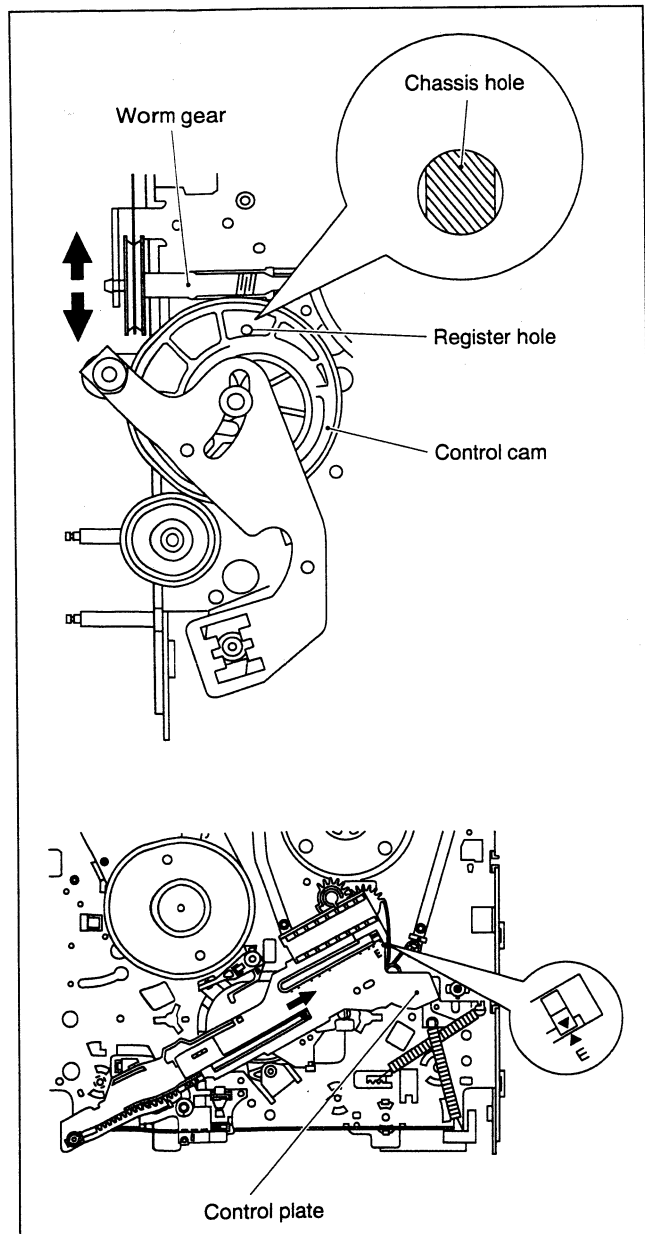


Fig. 2-2-1

2.2.3 Cassette Holder Assembly

1. How to remove

- (1) Remove the guide rail and rail cap. (See Fig.2-2-2).
- (2 lugs on the guide rail and one lug on the rail cap)

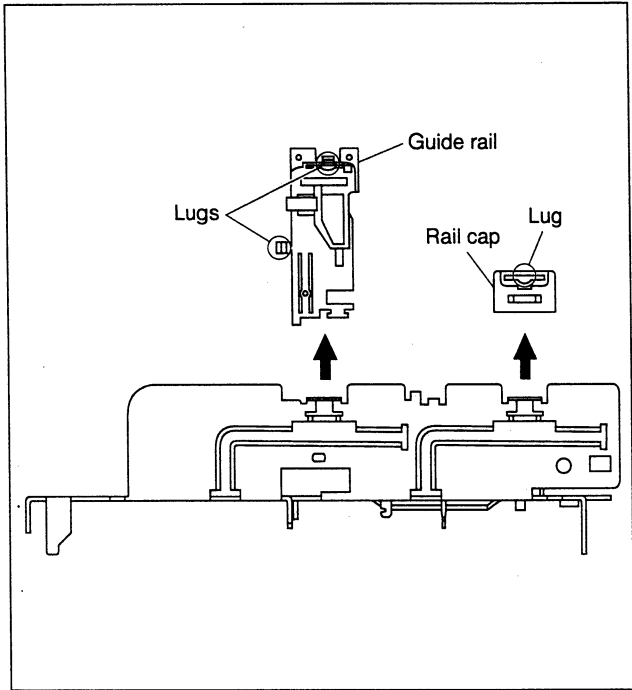


Fig. 2-2-2

- (2) Remove the two slit washers and remove the cassette holder bracket. (See Fig.2-2-3)
- (3) Remove the opener guide, relay gear and limit gear. (See Fig.2-2-3)

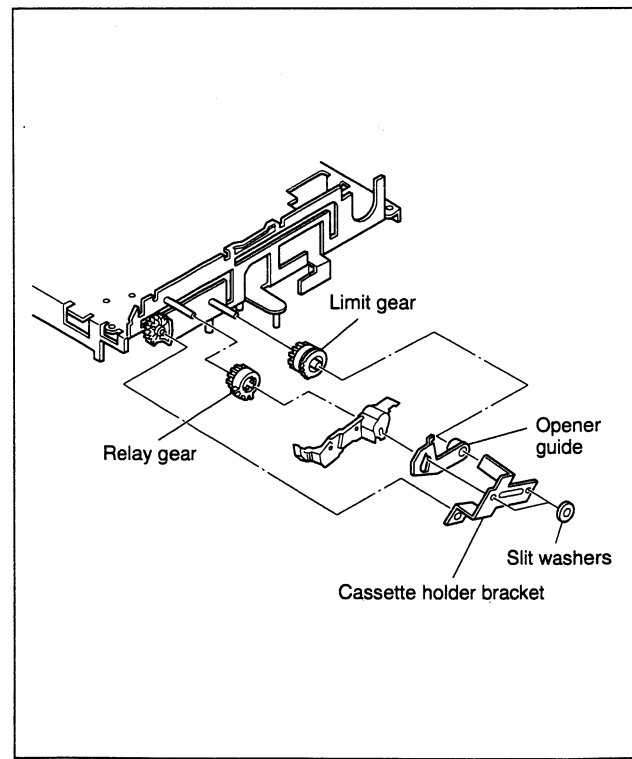


Fig. 2-2-3

(4) While swinging the lock levers (R) and (L) of the cassette holder assembly toward the front, slide the cassette holder assembly until its legs come to where the guide rail and the rail cap have been removed (so that the drive arm is upright). (See Fig.2-2-4)

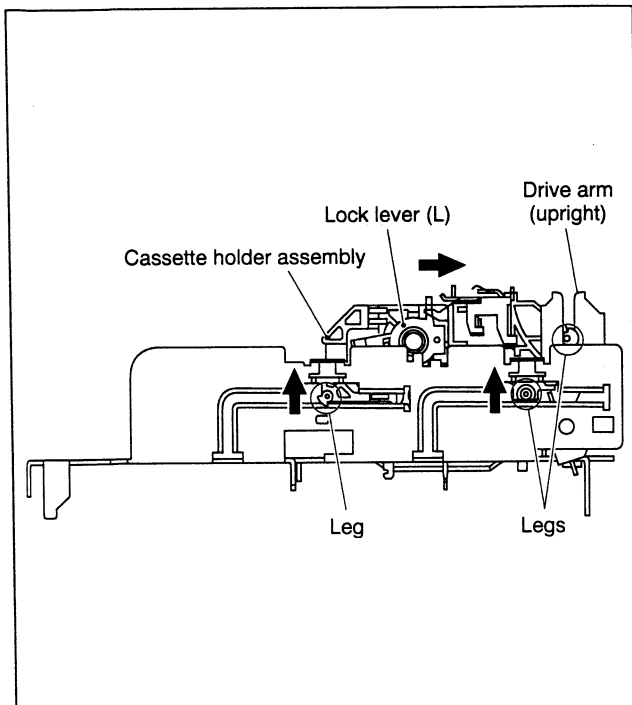


Fig. 2-2-4

(5) While holding the left side of the cassette holder, lift the cassette holder assembly so that the three legs on the left side are all released. Then pull the legs ① and ② on the right side out of the rail and also pull up the leg ③. (See Fig.2-2-5, Fig.2-2-6)

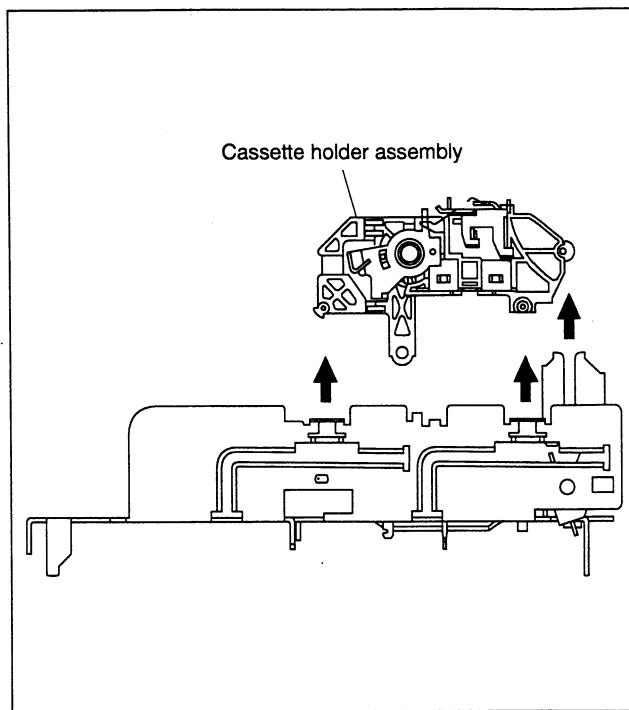


Fig. 2-2-5

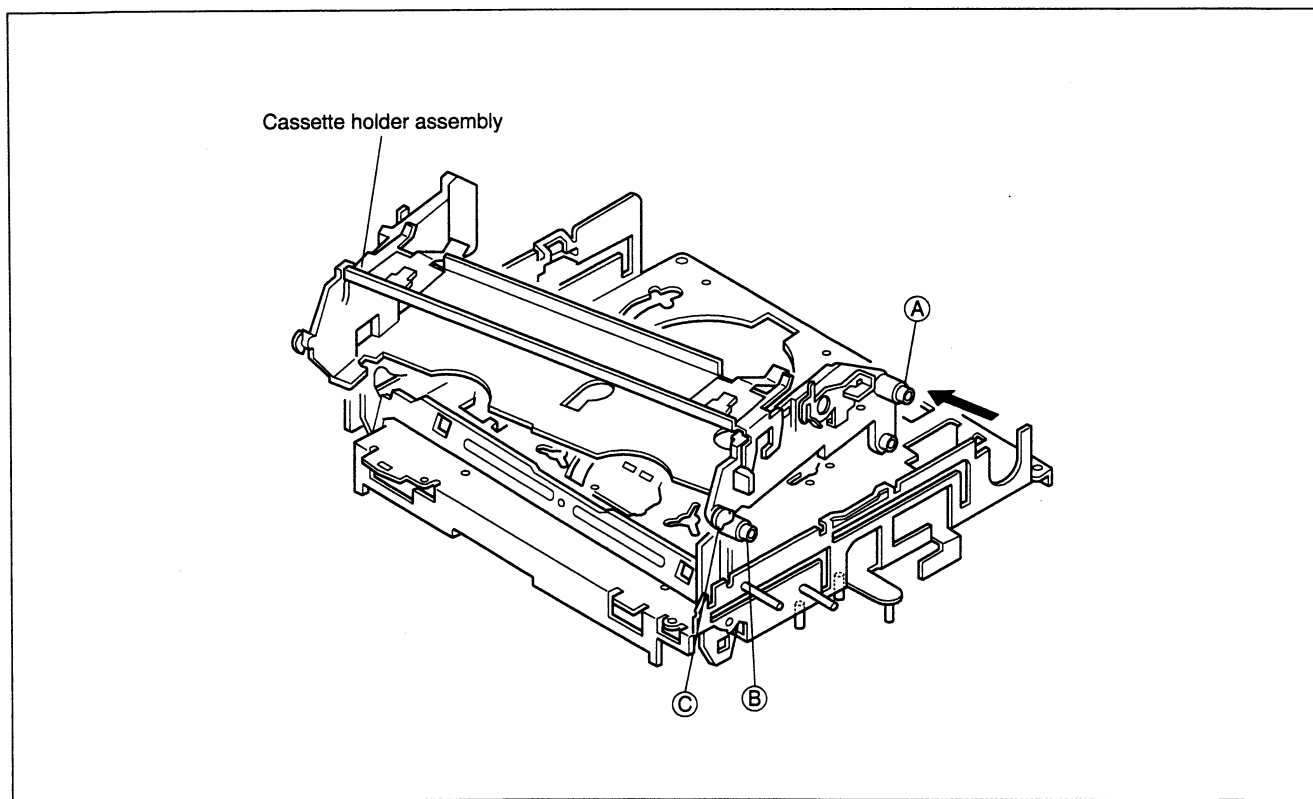


Fig. 2-2-6

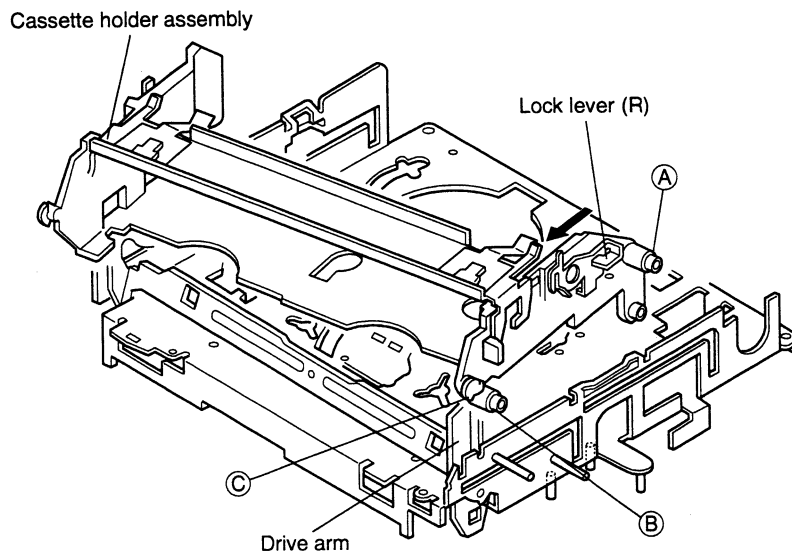


Fig. 2-2-7

2. How to install

- (1) Hold the drive arm upright and fit the leg ③ on the right side of the cassette holder assembly into the groove. (See Fig.2-2-7)
- (2) While swinging the lock lever (R) of the cassette holder assembly toward front, put the legs ① and ② into the rail. (See Fig.2-2-7)
- (3) Drop the three legs on the left side of the cassette holder into the groove at one time. (See Fig.2-2-8)
- (4) Slide the whole cassette holder toward the front to bring it to the eject end position.
- (5) Install the limit gear so that the notch on the outer circumference of the limit gear is brought into alignment with the register hole on the main deck. (See Fig.2-2-9)
- (6) Install the relay gear so that the notch on the outer circumference of the relay gear is brought into alignment with the notch on the main deck. It is important at this stage that the register hole at the limit gear, the register hole at the relay gear and the register hole at the drive gear are all in alignment. (See Fig.2-2-9).
- (7) Install the door stopper, opener guide and cassette holder bracket and fasten the two slit washers.

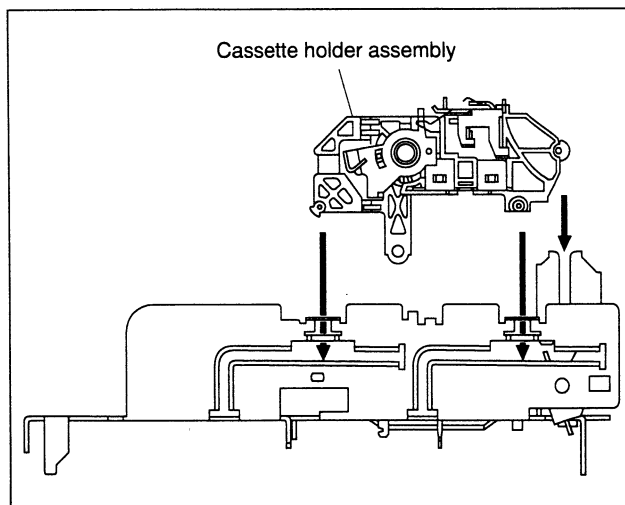


Fig. 2-2-8

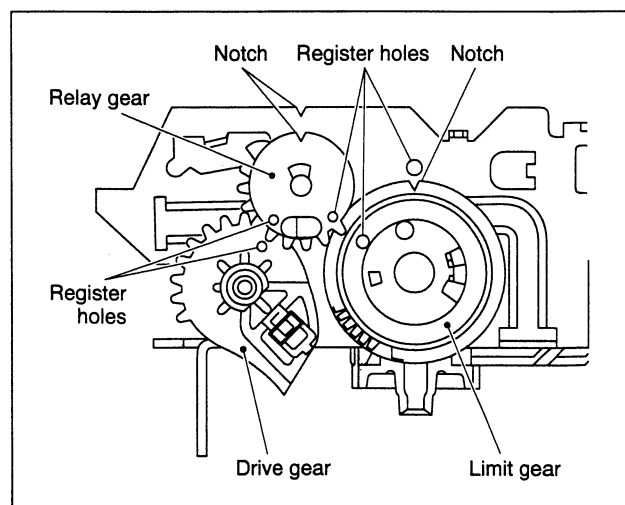


Fig. 2-2-9

2.2.4 Pinch Roller Arm Assembly

1. How to remove

- (1) Remove the spring from the hook of the press lever.
- (2) Remove the slit washer and remove the pinch roller seat.
- (See Fig.2-2-10)
- (3) Remove the pinch roller arm assembly by pulling it up.

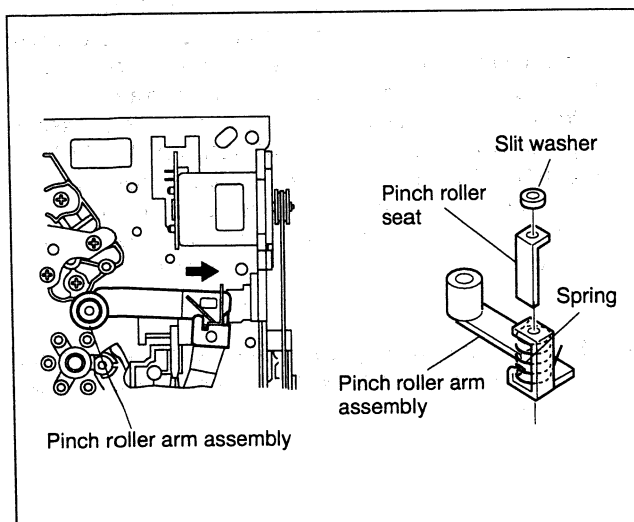


Fig. 2-2-10

2.2.5 Guide Arm and Press Lever

1. How to remove

- (1) Remove the spring and expand the lug of the lid guide in the arrow-indicated direction. Then remove the guide arm by pulling it up.
- (2) Remove the press lever by pulling it up. (See Fig.2-2-11)

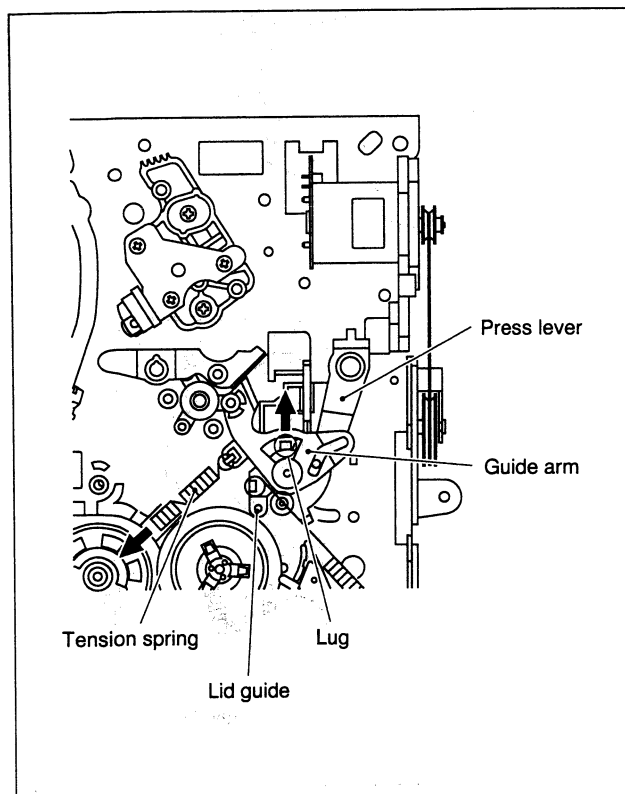


Fig. 2-2-11

2.2.6 Audio Control Head

1. How to remove

- (1) Remove two screws (A) and remove the audio control head together with the head base.

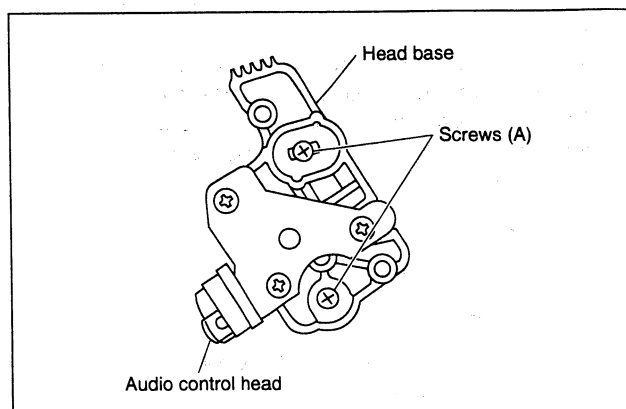


Fig. 2-2-12

- (2) When replacing only the audio control head, remove the three screws (B) while controlling the compression spring.

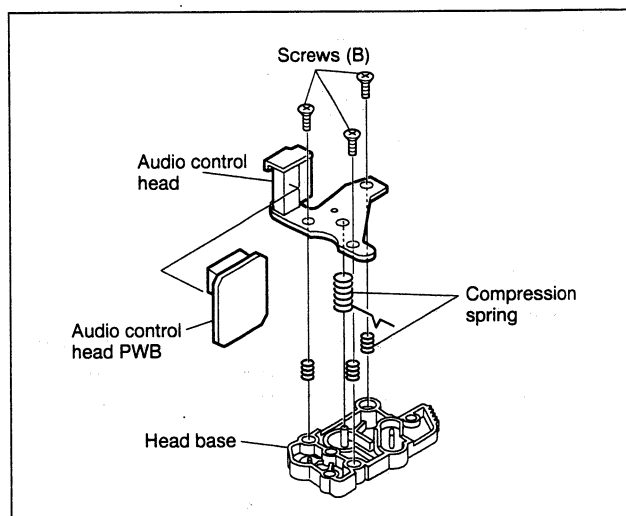


Fig. 2-2-13

2. How to install

- (1) To make the post-installation adjustment easier, set the temporary level as indicated in Fig.2-2-14. Also make sure that the screw center is brought into alignment with the center position of the slot.

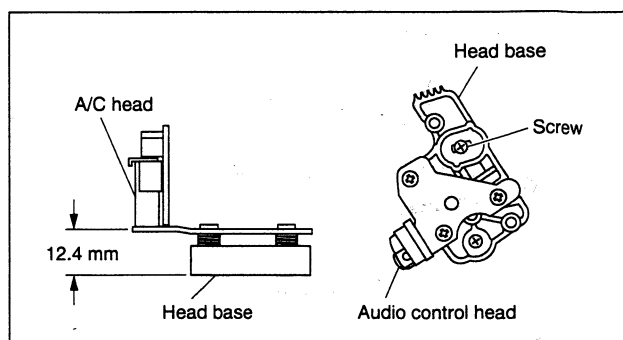


Fig. 2-2-14

2.2.7 Loading Motor

1. How to remove

- (1) Remove the belt wound around the worm gear.
- (2) Open the two lugs of the motor guide and remove the loading motor, loading motor PWB and motor guide altogether by pulling them up.
- (3) When replacing the motor base, take care with the orientation of the motor (so that the label faces upward).
- (4) When the motor pulley has been replaced, choose the fitting dimension as indicated in Fig.2-2-15.

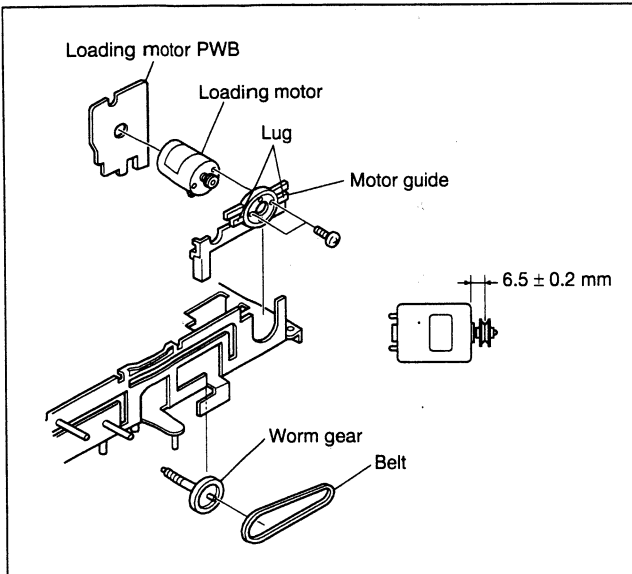


Fig. 2-2-15

2.2.8 Capstan Motor

1. How to remove

- (1) Remove the belt (capstan) on the main deck back side.
- (2) Remove one screw (A) and remove the pinch roller guide.
- (3) Remove two screws (B) and remove the capstan motor.

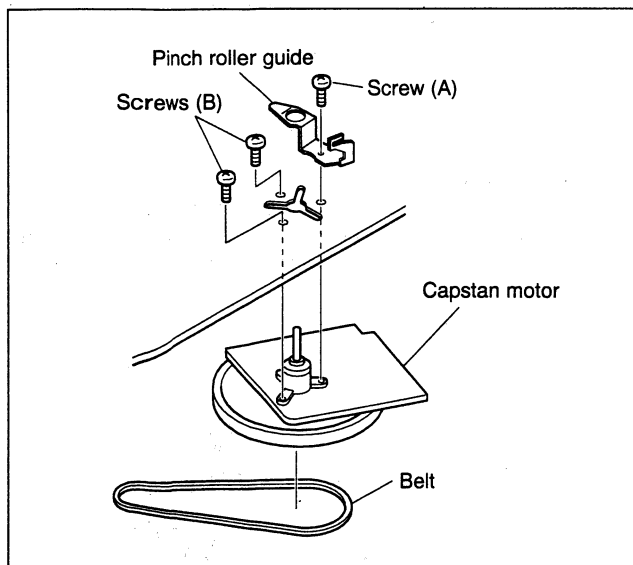


Fig. 2-2-16

2. How to install

Please refer to page 2-25.

2.2.9 Pole Base (on the supply or take-up side)

1. How to remove

- (1) Remove the UV catcher on the removal side by loosening one screw (A).
- (2) Remove the pole base on the supply side from the main deck by loosening one screw (B) on the main deck back side and sliding the pole base toward the UV catcher.
- (3) As for the pole base on the take-up side, turn the pulley of the loading motor to lower the cassette holder because the screw (B) is hidden under the control plate (See the "Procedures for Lowering the Cassette holder assembly" on page 1-3 of 1.3 DISASSEMBLY/ASSEMBLY METHOD). Further turn the motor pulley to move the cassette holder until the screw (B) is no longer under the control plate (in the half-loading position). Then remove it as done for the supply side by removing one screw (B).

NOTE: After reinstalling the Pole base and the UV catcher, be sure to perform compatibility adjustment.

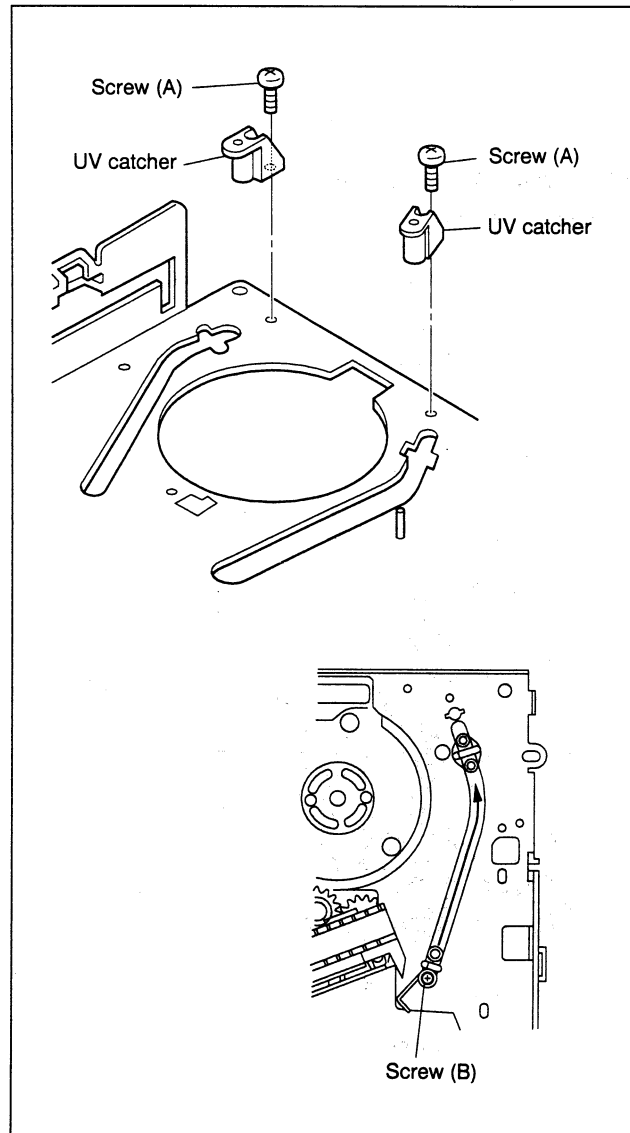


Fig. 2-2-17

2.2.10 Rotary Encoder

- (1) Remove one screw (A) and remove the rotary encoder by pulling it up.
- (2) When installing the rotary encoder, bring the register marks into alignment as indicated in Fig.2-2-18.

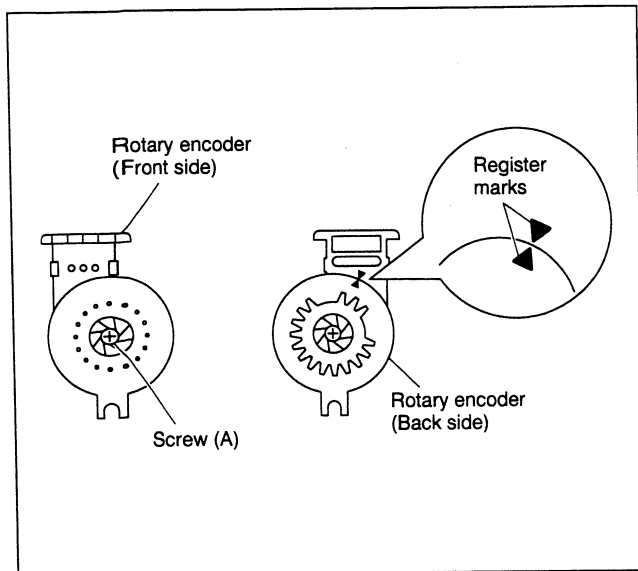


Fig. 2-2-18

2.2.11 Clutch Unit

- (1) Remove the belt wound around the capstan motor and the clutch unit.
- (2) Remove the slit washer and remove the clutch unit.

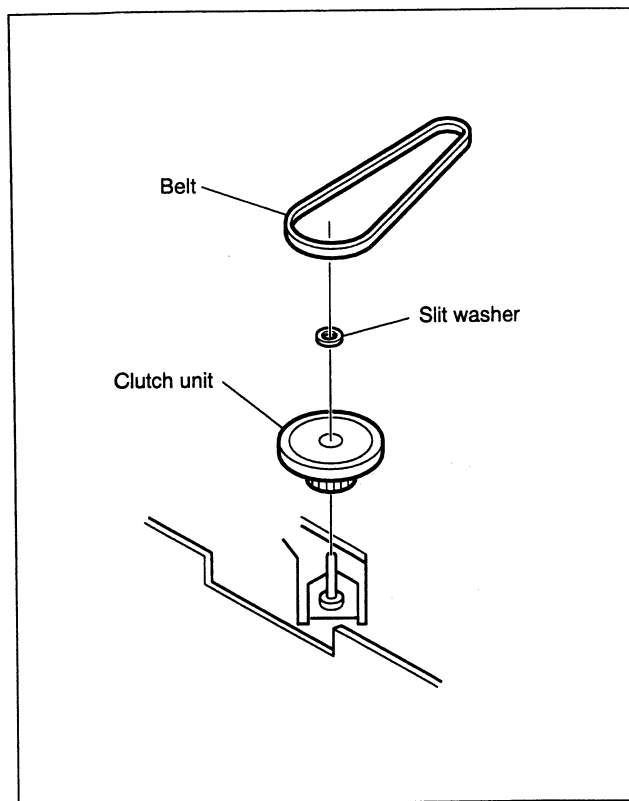


Fig. 2-2-19

2.2.12 Change Lever and Direct Gear

- (1) Release two lugs of the rotary encoder guide in the arrow-indicated direction and remove the change lever.
 - (2) Remove the slit washer retaining the direct gear and remove the latter.
- Take care of the two washers and one spring on and under the direct gear. (See Fig.2-2-20)

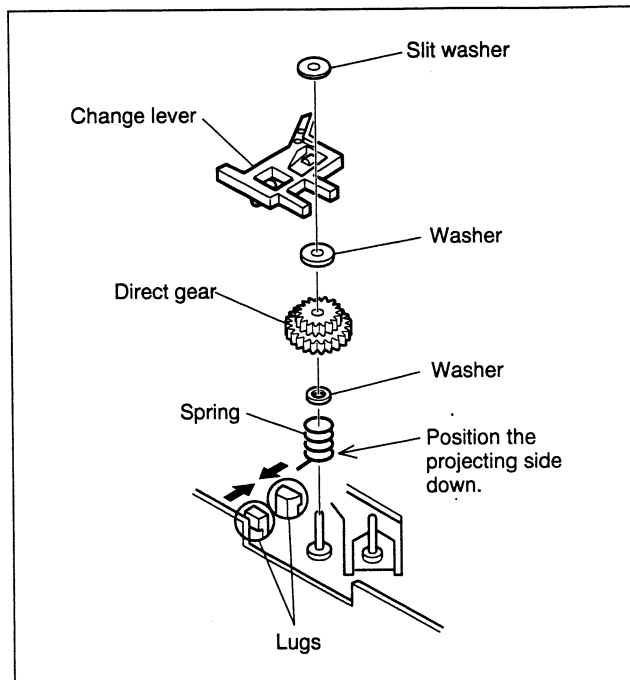


Fig. 2-2-20

2.2.13 Link Lever

- (1) Remove the two slit washers.
- (2) Remove the link lever by lifting it from the shaft retained by the slit washers. Then swing the link lever counterclockwise and remove it from the lock member of the control plate.

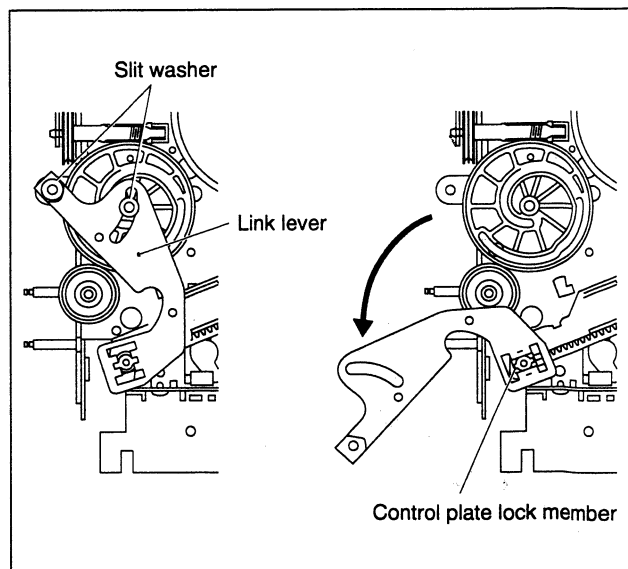


Fig. 2-2-21

2.2.14 Cassette Gear, Control Cam and Worm Gear

- 1) Remove the control cam by lifting it.
- 2) Open the two lugs of the cassette gear outward and pull the latter off.
- 3) Remove the belt wound around the worm gear and the loading motor.
- 4) Open the lug of the lid guide outward and remove the worm gear.
- 5) When installing the control cam, make sure that the register hole at the control cam is in alignment with the register hole of the main deck. (See Fig.2-2-22)

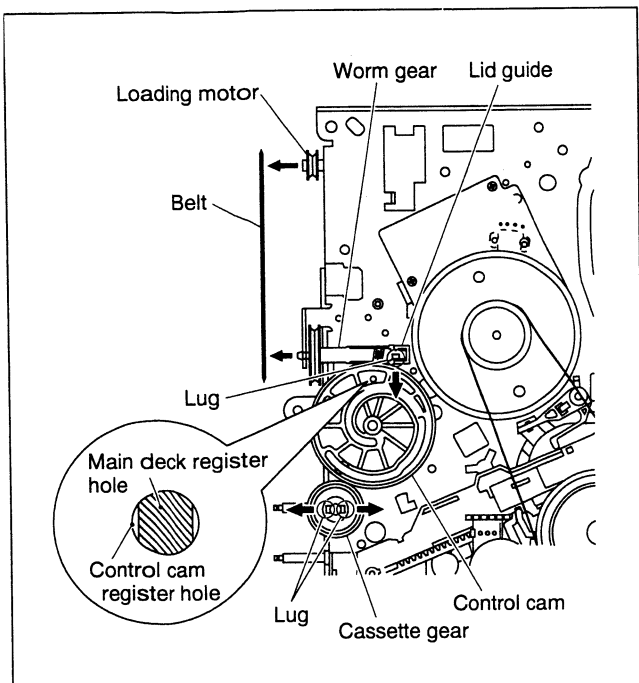


Fig. 2-2-22

2. How to install

- (1) Adjust the position of the idler arm pin as indicated in Fig.2-2-24. (to the left of center of the R section)
- (2) Bring the positioning hole of the take-up lever into alignment with the hole at the control plate guide and fix the position by inserting a 1.5 mm hexagonal wrench.
- (3) Press-fit the pole base (on the supply side) as indicated by the arrow and install the control plate so that section A of the loading arm gear shaft fits into hole (A) of the control plate, section B of the control plate guide into hole (B), and the control plate comes under section C of the rotary encoder guide and section D of the loading arm (on the take-up side). Then slide the whole control plate in the arrow-indicated direction. (See Fig.2-2-25).
- (4) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft. (See Fig.2-2-25)
- (5) Pull off the hexagonal wrench for positioning.

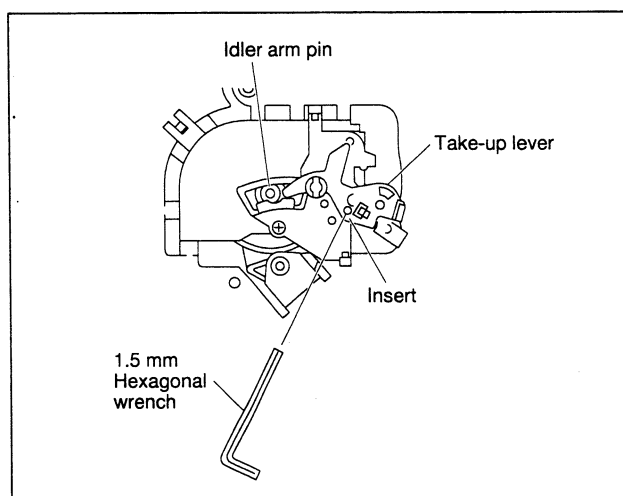


Fig. 2-2-24

2.2.15 Control Plate

1. How to remove

- (1) Remove one screw (A) retaining the control plate bracket and remove the latter.
- (2) Slide the control plate as indicated by the arrow and remove the control plate. (See Fig.2-2-23)

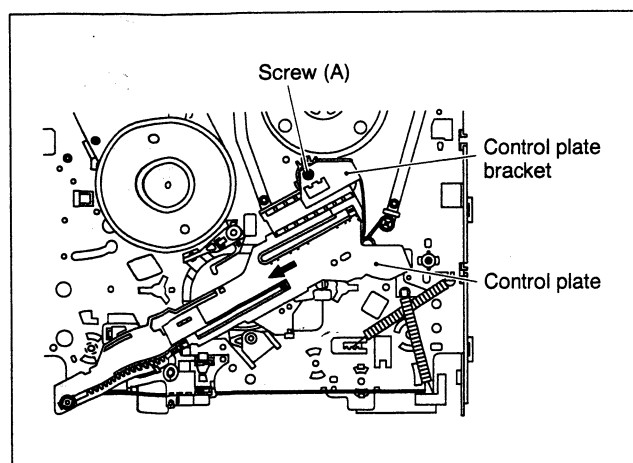


Fig. 2-2-23

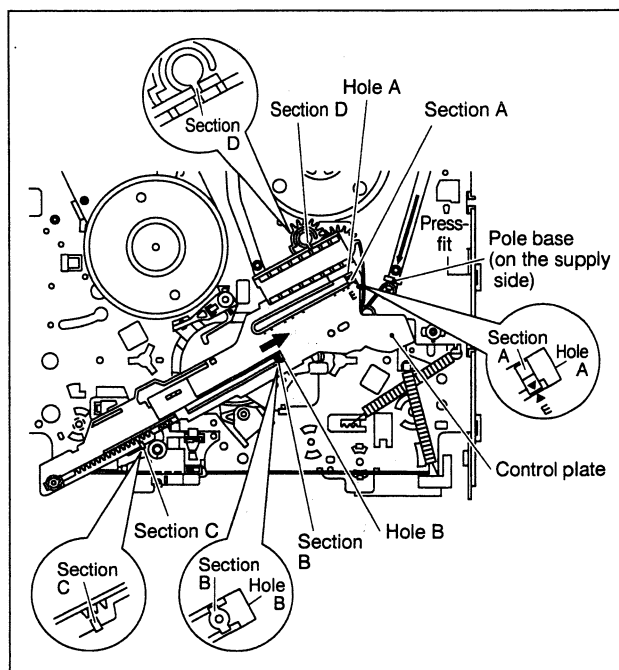


Fig. 2-2-25

2.2.16 Loading Arm (on the supply or take-up side) and Loading Arm Gear Shaft

1. How to remove

- (1) Remove the loading arm (on the supply side) by loosening screw (A) in Fig.2-2-26.
- (2) Remove screw (B) in Fig.2-2-26 and slide the pole base in the loading direction with the spring held on the pole base (on the take-up side). (See Fig.2-2-26)
- (3) Pull the spring out of the pole base. Turn the loading arm clockwise through about 45 degrees so that the notch of the loading arm is in alignment with the projection of the loading arm gear shaft and lift it.
Likewise, turn the loading arm counterclockwise through 180 degrees so that the notch is in alignment with the projection and remove the loading arm (on the take-up side). (See Fig.2-2-27)
- (4) When removing the loading arm gear shaft, be sure of first removing the screw retaining the drum assembly (on the back side of the loading arm gear shaft). Then remove one screw (C) and remove the loading arm gear shaft by sliding it in the arrow-indicated direction.

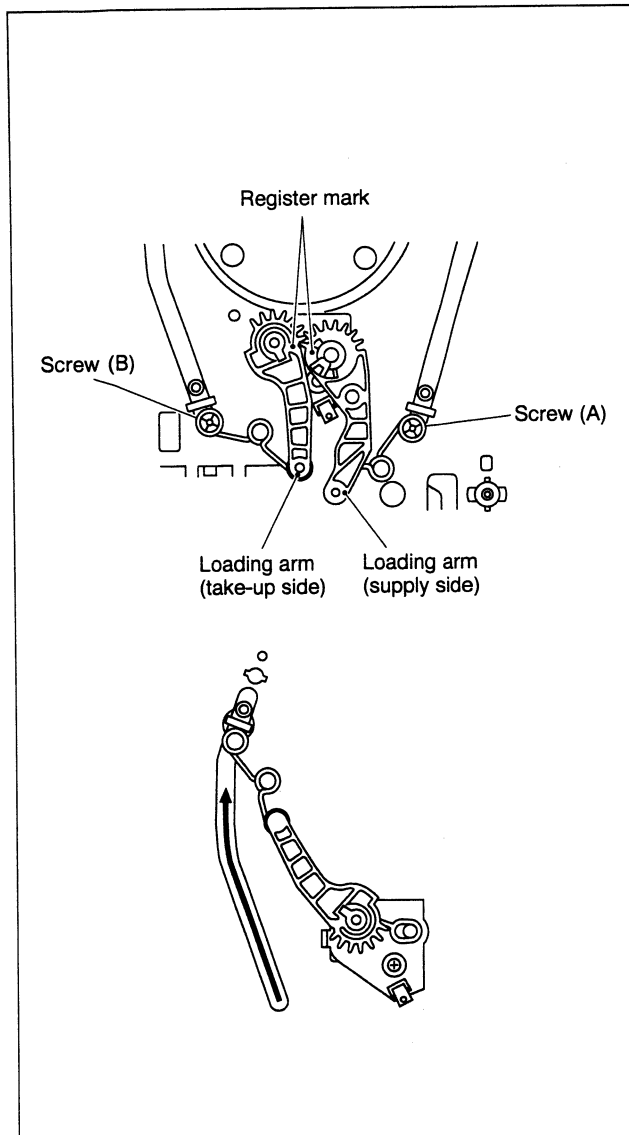


Fig. 2-2-26

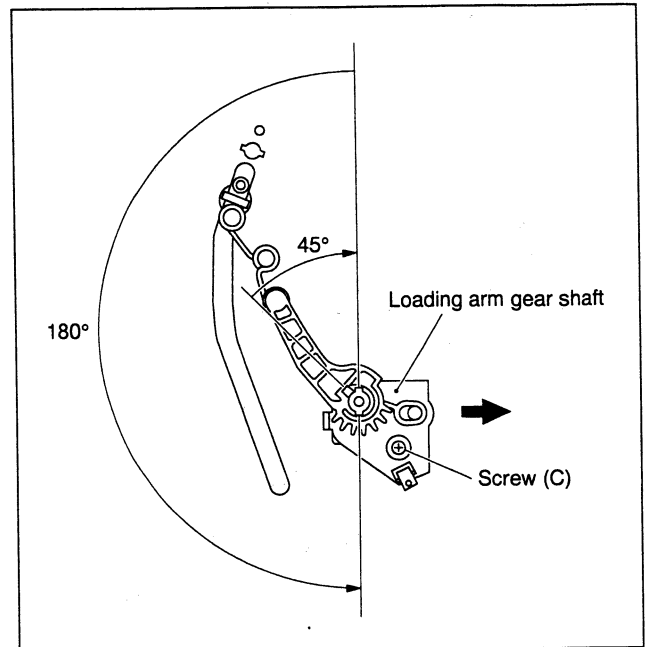


Fig. 2-2-27

2. How to install

- (1) Install the loading arm (on the take-up side) as indicated in Fig.2-2-28 and turn it clockwise through 180 degrees so that the loading arm reaches the bottom of the loading arm gear shaft.
- (2) Then turn the loading arm (on the take-up side) counterclockwise through 180 degrees. Hang the spring on the pole base and tighten the screw.
- (3) Install the loading arm (on the supply side) so that the register mark of the loading arm (on the take-up side) is in alignment with the register mark of the loading arm (on the supply side). Then hang the spring on the pole base and tighten the screw. (See Fig.2-2-26).

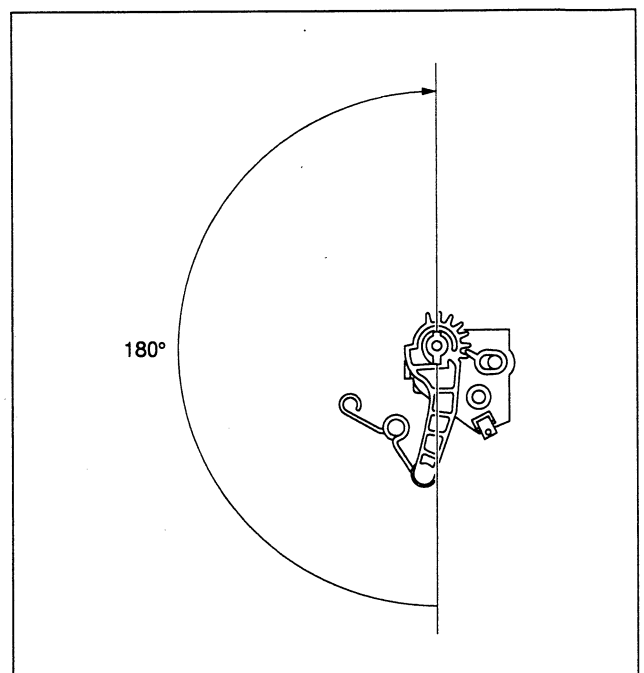


Fig. 2-2-28

2.2.17 Take-up Lever, Take-up Head and Control Plate Guide

- (1) Remove the spring of the take-up lever from the main deck.
- (2) Remove one lug of the take-up lever from the main deck and pull out the take-up lever and the take-up head together.
- (3) Remove one screw (A).
- (4) Remove two lugs of the control plate guide from the main deck. Locate the idler arm pin in the center of the R section of the control plate and remove the latter.

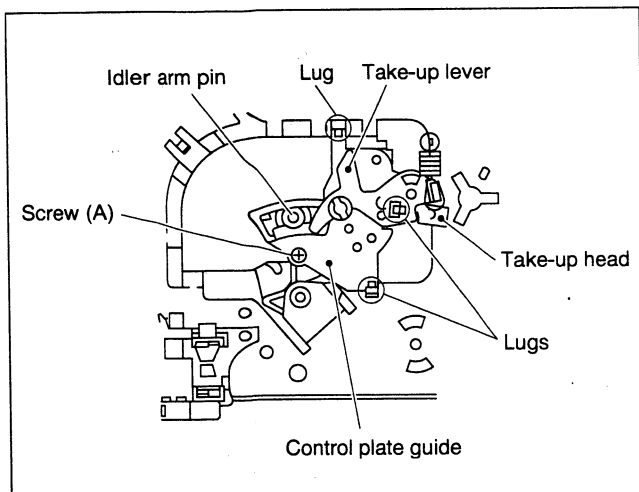


Fig. 2-2-29

2.2.18 Capstan Brake

- (1) Move lug A of the capstan brake in the arrow-indicated direction so that it comes into alignment with the notch of the main deck. (See Fig. 2-2-30)
- (2) Remove lug B of the capstan brake from the main deck and remove the capstan brake.

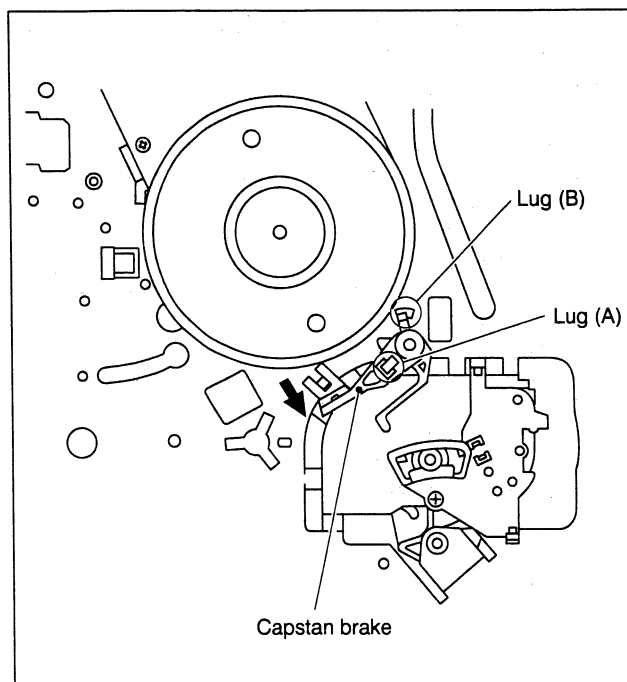


Fig. 2-2-30

2.2.19 Drive Gear and Drive Arm

1. How to remove

- (1) Remove the cassette holder assembly. (See 2.2.3 How to remove the cassette holder assembly)
- (2) Pull out the drive gear and remove the drive arm.

2. How to install

- (1) Insert section A of the drive arm into section B of the main deck.
- (2) Insert section ① of drive gear into hole ○ of the drive arm and section ② into hole □. (See Fig. 2-2-31)

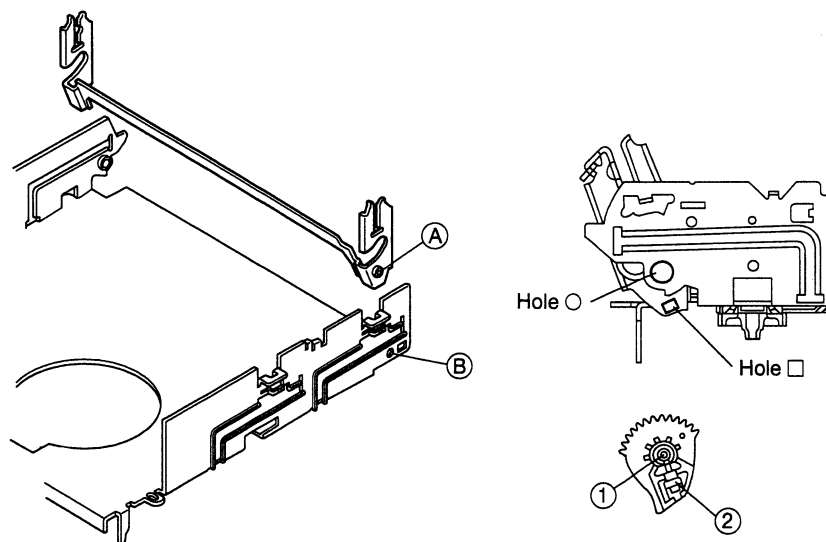


Fig. 2-2-31

2.2.20 Sub Brake (on the take-up side)

- (1) Remove the spring attached to the lid guide and sub brake.
- (2) Bring lug **A** of the sub brake into alignment with the notch of the main deck.
- (3) Remove lugs **B** and **C** of the sub brake from the main deck and remove the sub brake.

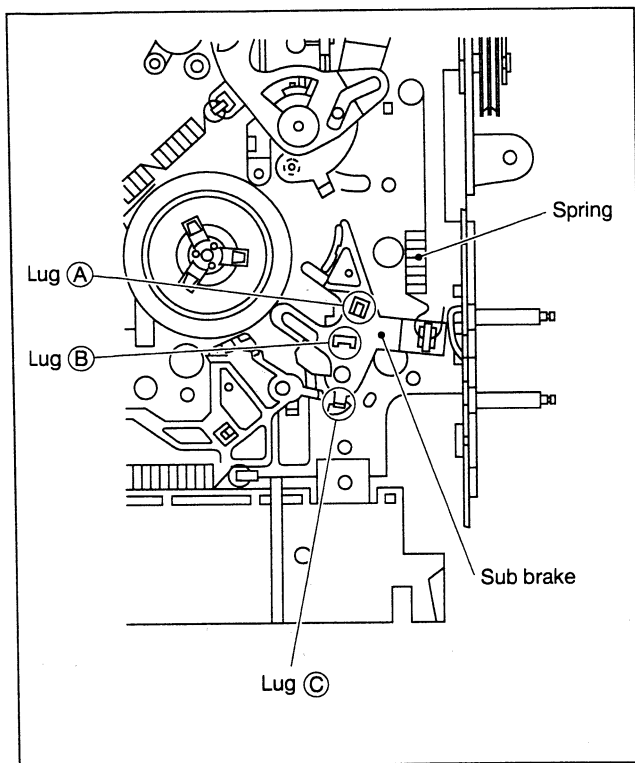


Fig. 2-2-32

2.2.21 Main Brake (on the take-up side), Reel Disk (on the take-up side) and Main Brake (on the supply side)

- (1) Move the main brake (on the take-up side) in the arrow-indicated direction and remove the reel disk (on the take-up side).
- (2) Remove the spring attached to the main brake.
- (3) Remove lug **A** of the main brake (on the take-up side) and pull out lug **B** after bringing it into alignment with the main deck notch.
- (4) Remove lugs **C** and **D** of the main brake (on the supply side) from the main deck and pull them off. (See Fig. 2-2-33)

Note: If the main brake is difficult to remove, press it and hold the adjustment pin from the back side of the main deck when attempting to remove it. After the adjustment pin has been removed or the main brake or the reel disk on the supply or take-up side have been replaced, it is required to adjust the main brake torque. See page 2-24 for the detailed adjustment procedures.

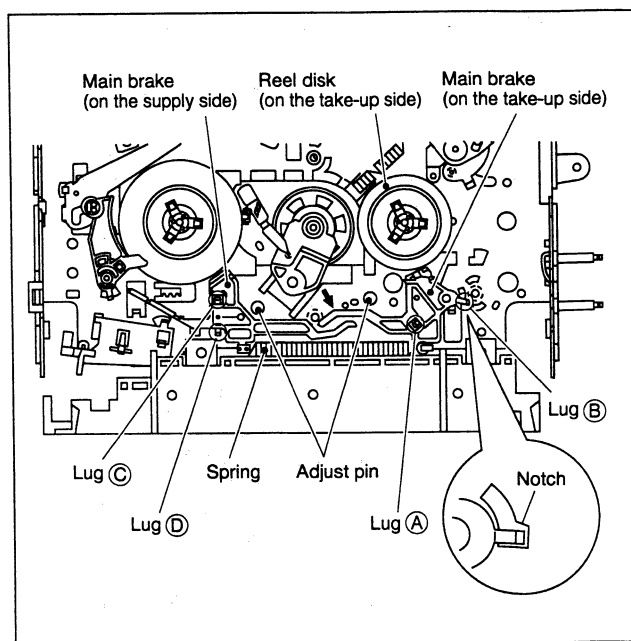


Fig. 2-2-33

2.2.22 Tension Brake, Reel Disk (on the supply side) and Tension Arm

- (1) Remove the three lugs of the tension brake from the main deck and pull them off.
- (2) Remove the reel disk (on the supply side) by loosening in the arrow-indicated direction the main brake (on the supply side).
- (3) Remove the tension spring on the main deck back side and remove the lugs of the tension arm bearing to pull up and remove the tension arm. (See Fig. 2-2-34)

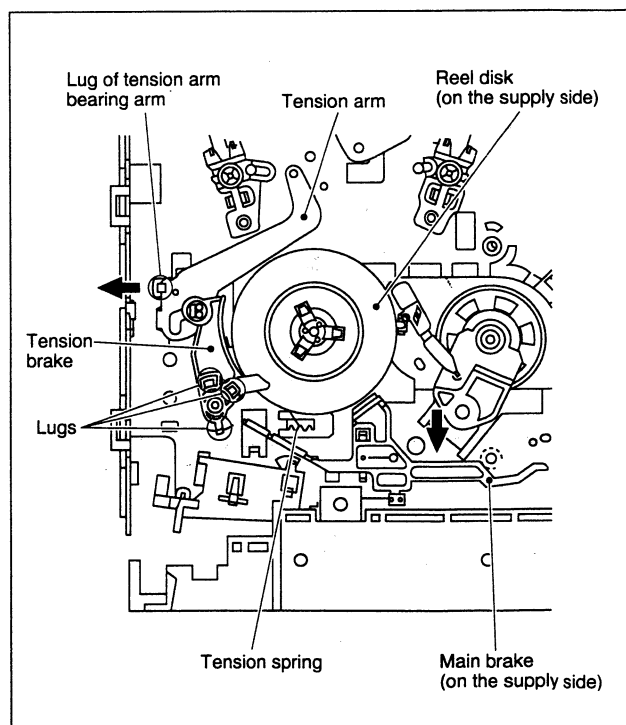


Fig. 2-2-34

2.2.23 Idler Lever, Idler Arm and Reel Shaft

- (1) Remove one lug of the idler lever from the main deck and remove the hook fitted in the idler arm hole by lifting it.
- (2) Remove the slit washer and pull out the idler arm.
- (3) Turn the reel shaft counterclockwise through 60 degrees and remove it. (See Fig.2-2-35)

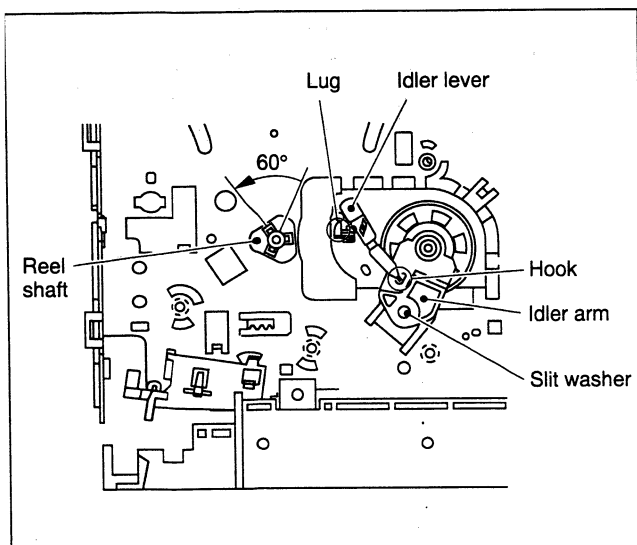


Fig. 2-2-35

2.2.24 Stator Assembly

- (1) Remove two screws (A).
- (2) Remove the stator assembly by lifting in the arrow-indicated direction (Take care that the brush spring does not jump out).
- (3) Remove the flat cable.
- (4) After installation, be sure to perform the 3.2.1 PB switching point adjustment according to the electrical adjustment procedure.

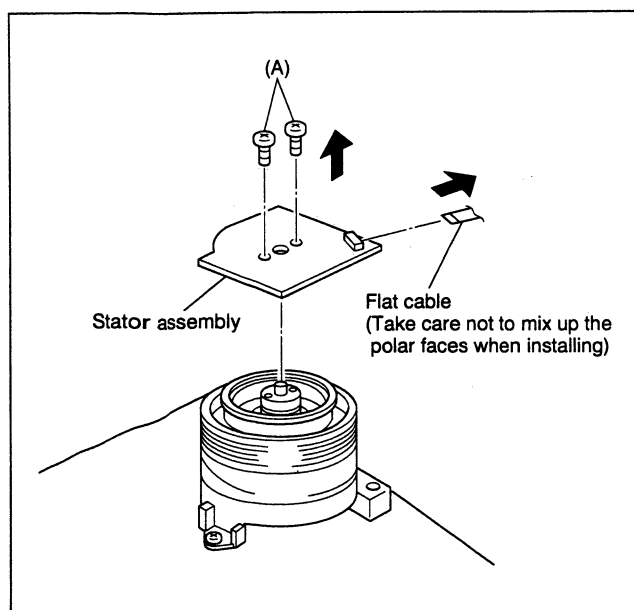


Fig. 2-2-36

2.2.25 Rotor Assembly

- (1) Remove the stator assembly.
- (2) Remove the two screws (B) and remove the rotor assembly.

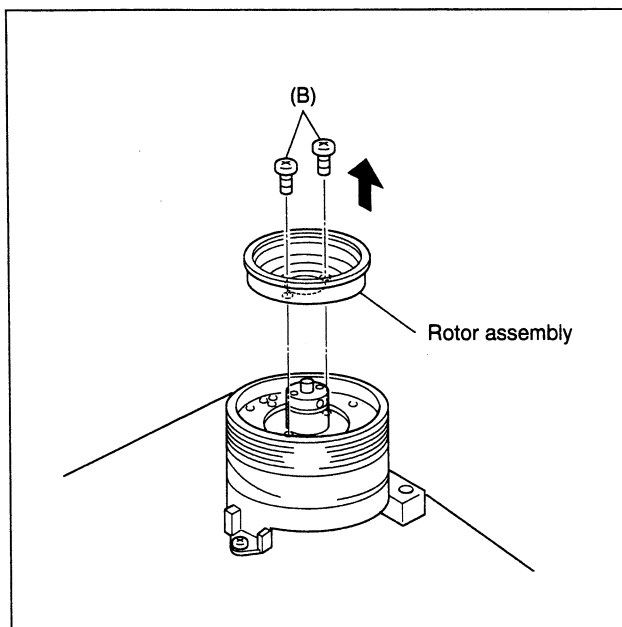


Fig. 2-2-37

Note: When installing the rotor assembly, note that a normal picture cannot be obtained without ensuring the phase matching as mentioned below.

- (3) Match the phases of the upper drum and the rotor assembly as indicated in Fig.2-2-38.
- (4) Place the upper drum hole (a) over the rotor assembly holes (b) (with three holes to be aligned) and tighten the two screws (B). (See Fig.2-2-38)

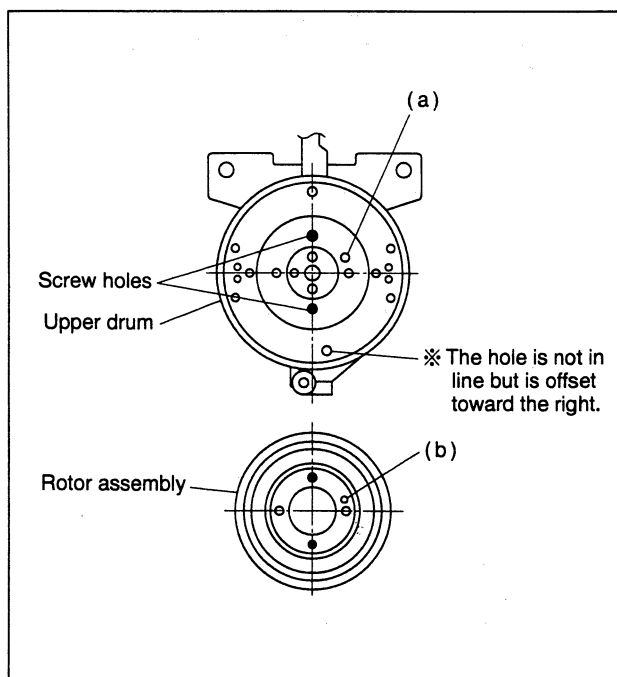


Fig. 2-2-38

2.2.26 Upper Drum Assembly

1. How to remove

- (1) Remove the stator assembly and rotor assembly. (See Fig. 2-2-36 and 2-2-37)
- (2) Loosen the screw of the collar assembly using a 1.5 mm hexagonal wrench and remove the collar assembly. Also remove the brush, spring and cap at one time.
- (3) Remove the upper drum assembly and remove the washer using tweezers.

Note: When replacement is required, control the up-down movement of the brush. Never apply grease.

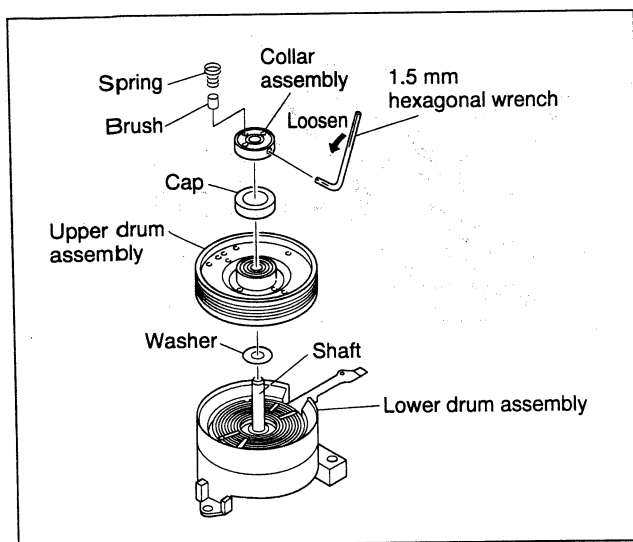


Fig. 2-2-39 Upper drum assembly-1

2. How to install

- (1) Clean coil parts of the lower drum assembly and the newly installed upper drum assembly with an air brush in advance. (See Fig.2-2-40).
- (2) Install a new washer and upper drum assembly on the drum shaft. (See Fig.2-2-39)

Note: When replacing the upper drum assembly, replace it together with the washer.

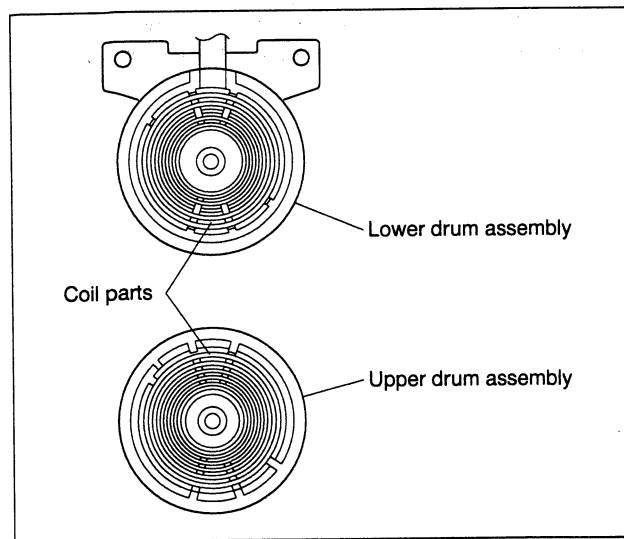


Fig. 2-2-40

- (3) Position the collar assembly as indicated in Fig.2-41 while controlling its up-down movement.

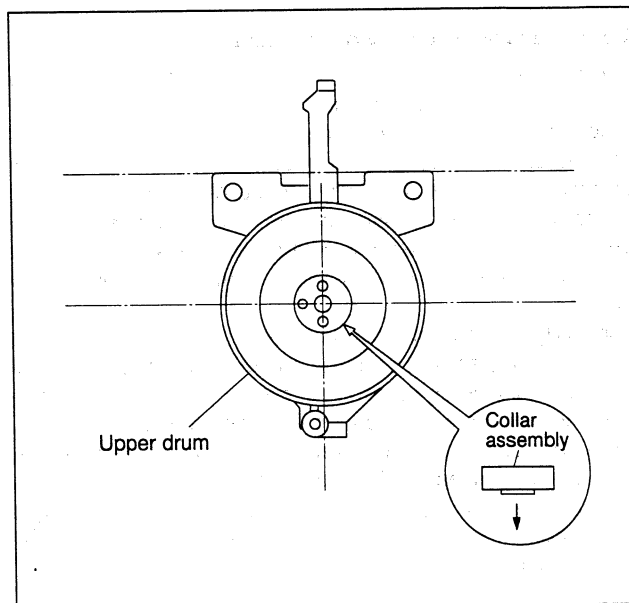


Fig. 2-2-41

- (4) Secure the collar assembly in position with a hexagonal wrench while pressing its top with the fingers.

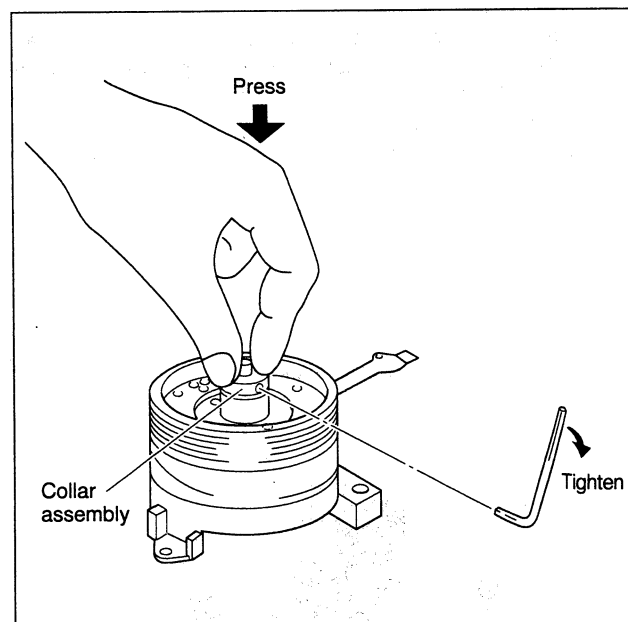


Fig. 2-2-42

- (5) After installation, gently turn the upper drum with your hand to make sure that it turns normally.
- (6) Install the rotor assembly and stator assembly according to Fig. 2-2-36 and 2-2-38.
- (7) When installation is complete, clean the upper drum assembly and lower the drum assembly and carry out the following adjustments.
 - PB switching point adjustment
 - Slow tracking adjustment
 - Compatibility adjustment (Be sure to check for compatibility for the EP mode.)

2.3 MAJOR PARTS INSTALLATION (PHASE MATCHING BETWEEN MECHANICAL PARTS)

2.3.1 Before Assembly of the Parts

The mechanism of this unit is closely linked with the rotary encoder and system controller circuits.

Since the system controller detects the status of mechanical operation in response to phases of the rotary encoder (internal switch positions), the mechanism may not operate properly unless such parts as the rotary encoder, control plate, loading arm assembly, control cam, cassette gear, limit gear, relay gear and drive gear are installed in their correct positions.

Especially, this model is not provided with any cassette housing assembly, so that cassette loading and unloading must be accomplished by operation of the cassette holder assembly. The latter is in turn driven by such parts as drive gear, relay gear and limit gear. Exercise enough care, therefore, to have the phases of all this gear matching one another. Perform the installation of major parts (including phase matching) in the mechanism assembling mode as in the previous section.

2.3.2 Loading Arm Assembly (on the Supply or Take-up Side)

- (1) Return the pole base assembly to the foremost position in the unloading direction.
 - (2) Install the loading arm assembly so that the register mark on the gear of the supply side loading arm is in alignment with the one on the take-up side loading arm as indicated in Fig. 2-3-1.
- See 2.2.16 "2. How to install" of the foregoing section for details of installation.

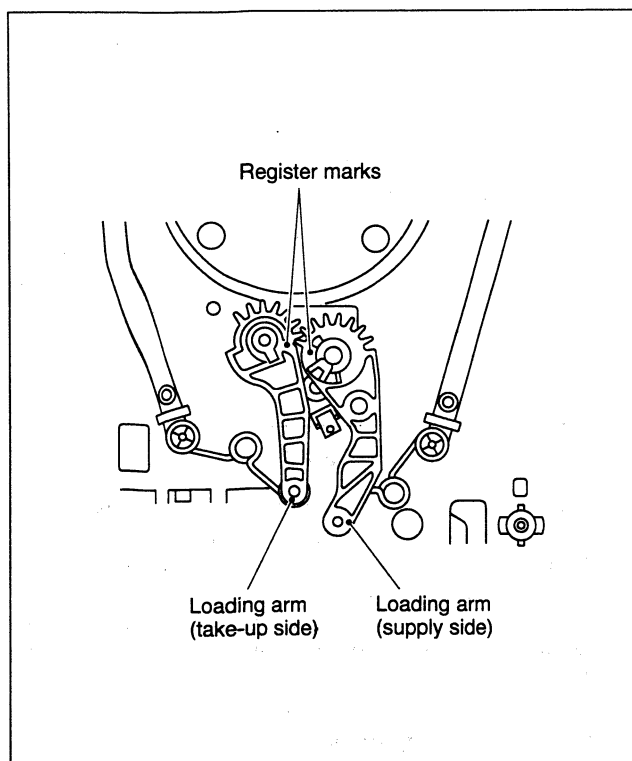


Fig. 2-3-1

2.3.3 Control Plate

- (1) With register marks on the both loading arm assemblies in alignment, install the control plate so that the mark ▼ on the loading arm gear shaft is in alignment with mark E of the control plate. (See Fig.2-3-2)
- See 2.2.15 "2. How to install" of the foregoing section for details of installation.

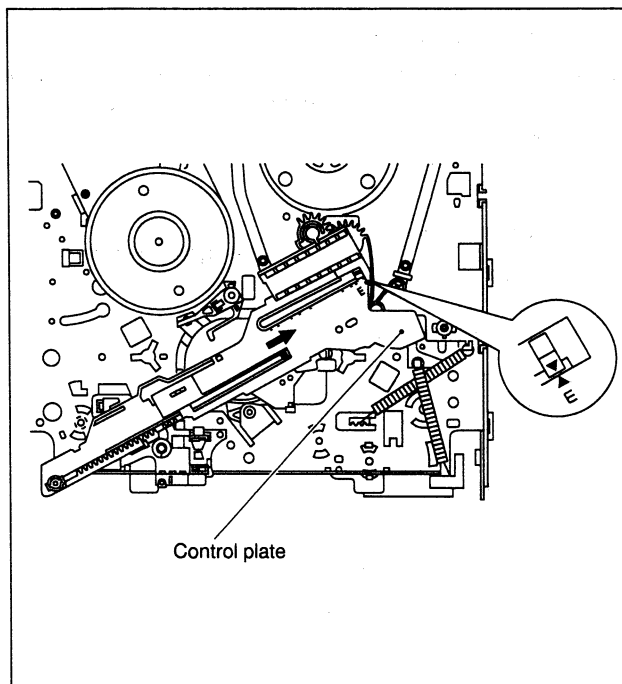


Fig. 2-3-2

2.3.4 Rotary Encoder

- (1) Make sure that the mark E of the control plate is in alignment with the mark ▼ of the loading arm gear shaft and bring the register marks on the rotary encoder into alignment as indicated in Fig.2-3-3.
- (2) Turn over the rotary encoder with its register marks kept in alignment and install it by fitting on the shaft of the rotary encoder guide and the positioning pin.
- (3) Tighten the screw (A) to complete the installation.

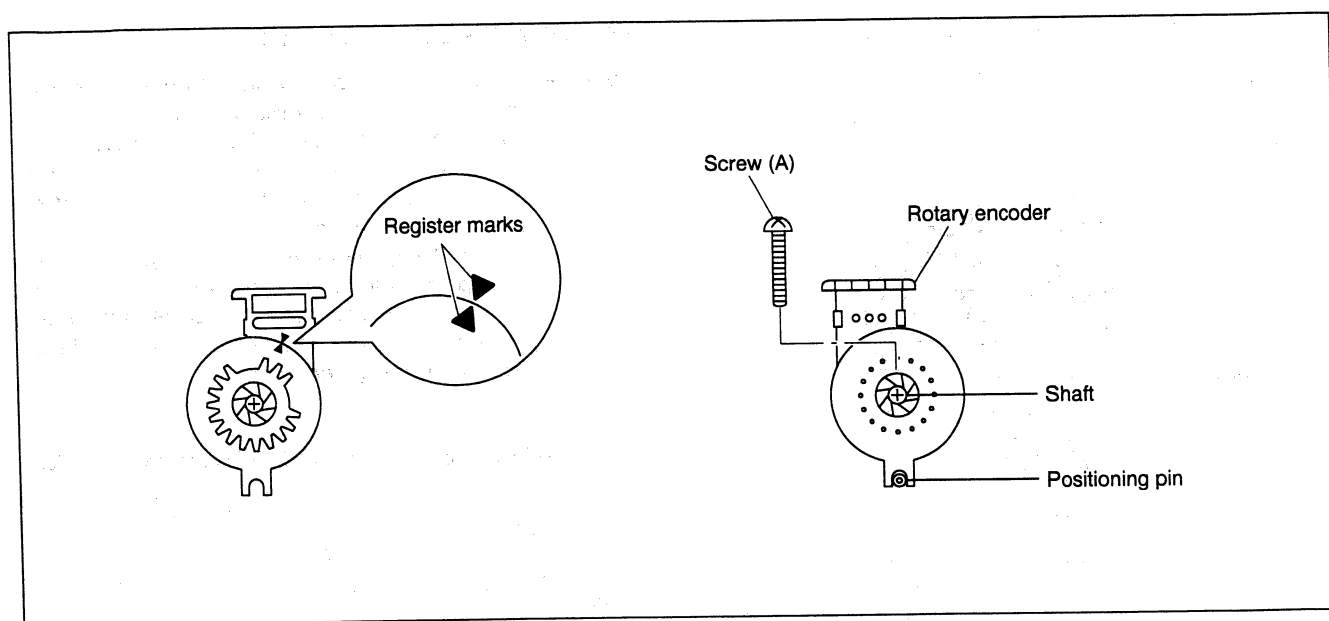


Fig. 2-3-3

2.3.5 Control Cam, Cassette Gear and Link Lever

- (1) Install the control cam as indicated in Fig.2-3-4 making sure of the front and back side alignment.
Note here that the register hole of the control cam is in alignment with and allows passage through the register hole of the main deck. Perform fine-adjustment by turning the worm gear.
- (2) Install the cassette gear by pushing it until it is locked with a clicking sound. (See Fig.2-3-4)
- (3) Insert section (A) of the link lever into section (B) of the control plate as shown in Fig.2-3-5.

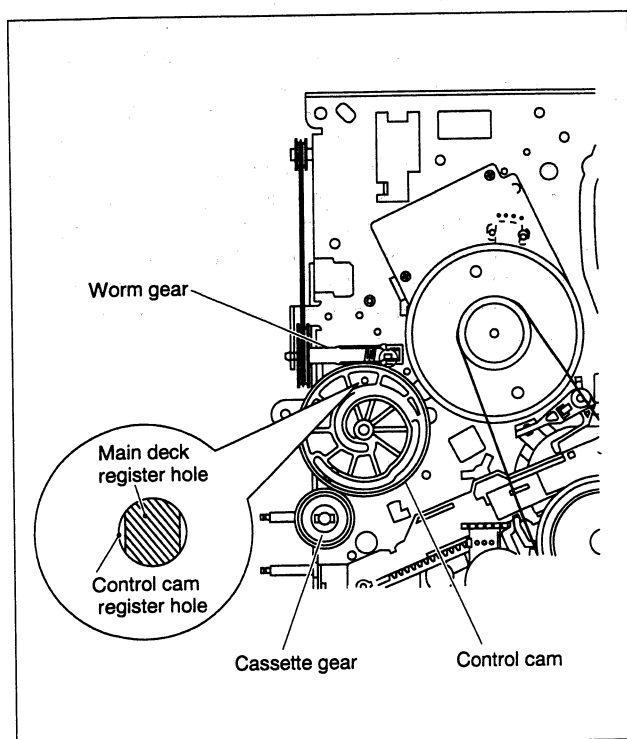


Fig. 2-3-4

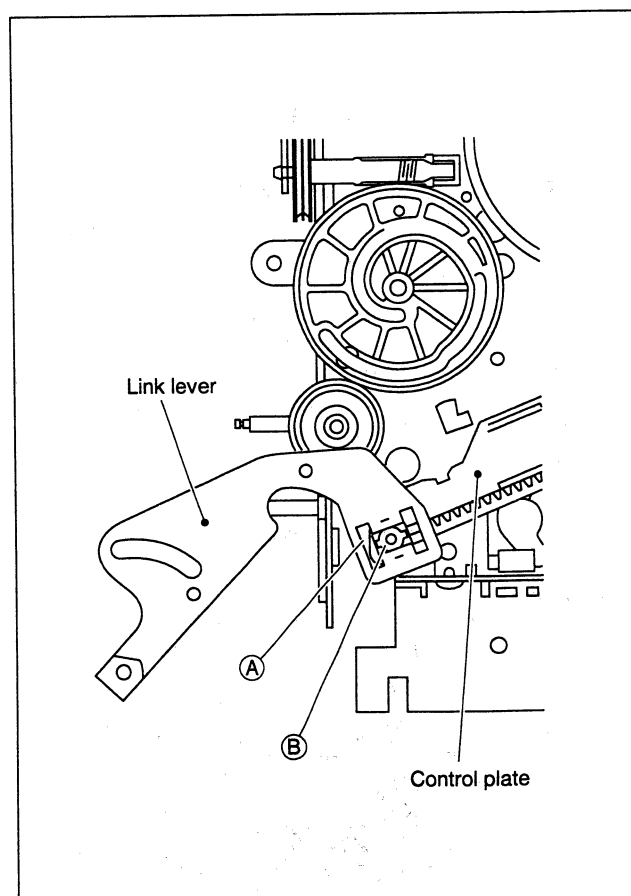


Fig. 2-3-5

- 4) Turn the link lever clockwise and mount it on the control cam center shaft (A) and the control cam left-side shaft (B). (See Fig.2-3-6).
- 5) Fasten the slit washers at two points (A) and (B).

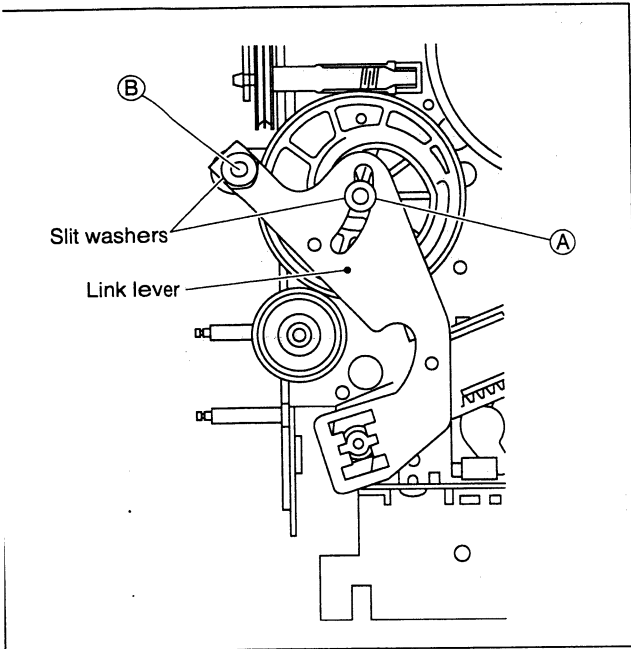


Fig. 2-3-6

2.3.6 Relay Gear, Limit Gear and Drive Gear

- (1) Install the limit gear so that the notch at its outer circumference is in alignment with the register hole of the main deck. (See Fig.2-3-7)
- (2) Install so that the notch at the outer circumference of the relay gear is in alignment with the notch of the main deck, and at the same time, that the hole A of the relay gear is in alignment with hole A of the limit gear and hole B of the relay gear with hole B of the drive gear. (See Fig.2-3-7)

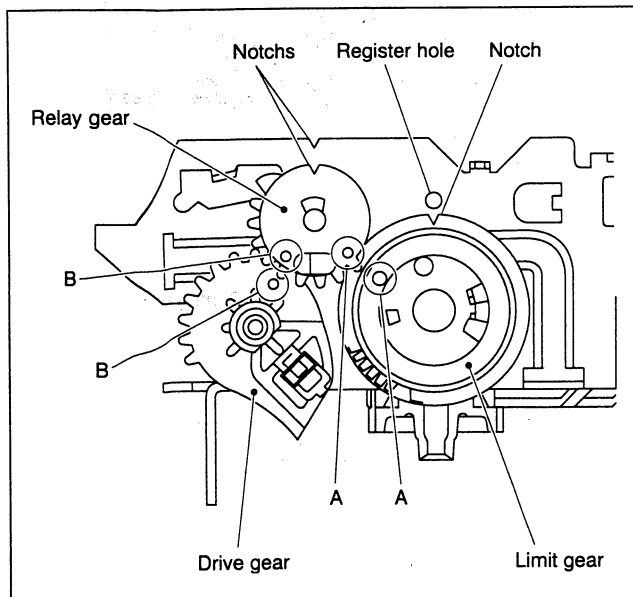


Fig. 2-3-7

2.4 COMPATIBILITY ADJUSTMENT

Notes: • Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the audio control head, drum assembly or any part of the tape transport system.

- To avoid any damage to the alignment tape while performing the compatibility adjustment, get a separate cassette tape (for recording and play back) ready to be used for checking the initial tape running behavior.

2.4.1 Checking/Adjustment of FM Waveform Linearity

- (1) Connect the oscilloscope to TP106(PB FM/COL) of the main board assembly and to TP111(D.F.F) of the main board assembly for external sync connection.
- (2) Playing the alignment tape MHP, observe the FM waveform.
- (3) Press the channel buttons (+) and (-) buttons simultaneously during playback to enter the manual tracking mode (This also brings tracking to the center.)
- (4) Make sure that there is no significant level drop of the FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (Fig.2-4-1)
- (5) Slightly loosen the set screw under the pole base assembly with a 1.25 mm hexagonal wrench (Take care not to loosen too much). (Fig.2-4-2)
- (6) Reduce the FM waveform while pressing the channel buttons (+, -) during playback. If a drop in level is found on the left side as shown in Fig.2-4-3, turn the guide roller of the pole base assembly (supply side) with the roller driver (PTU94002) to make the FM waveform linear. If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the guide roller to make it linear. (Fig.2-4-3)
- (7) Then play MHP-L and make sure that the FM waveform varies in parallel and linearly with the tracking operation. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
- (8) After adjustment, tighten the set screw under the pole base assembly. (Take care not to tighten too much)
- (9) After tightening the set screw, play the alignment tape MHP and MHP-L again to make sure that the FM waveform has correct variation.

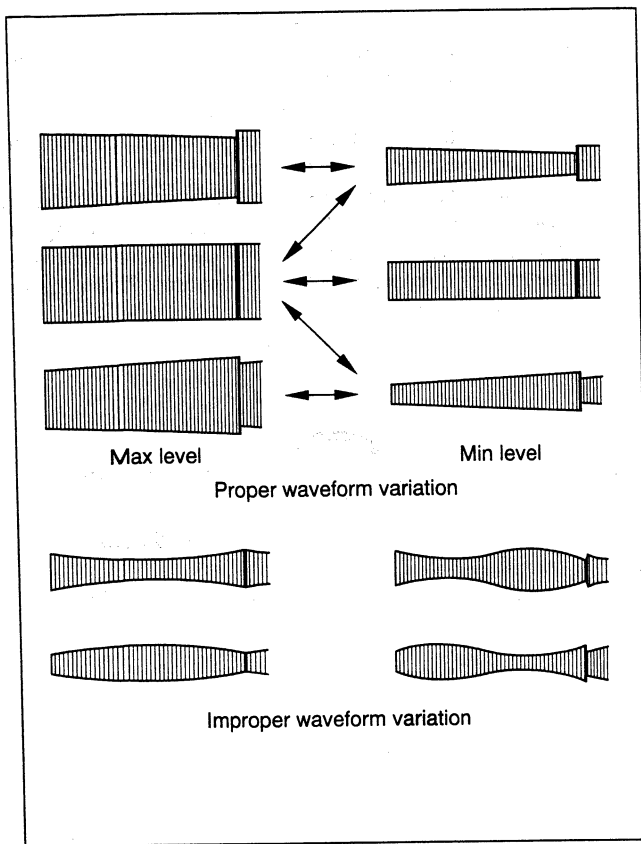


Fig. 2-4-1

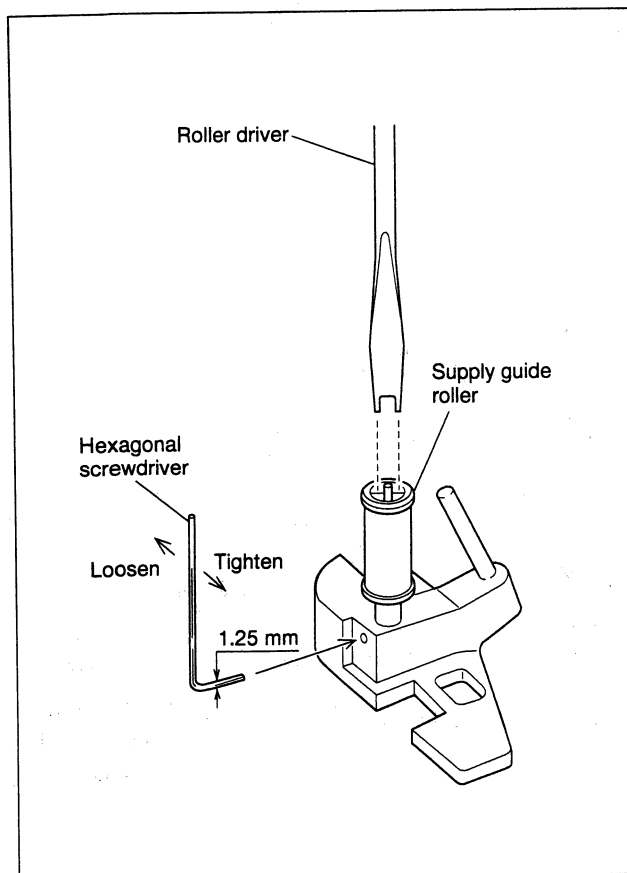


Fig. 2-4-2

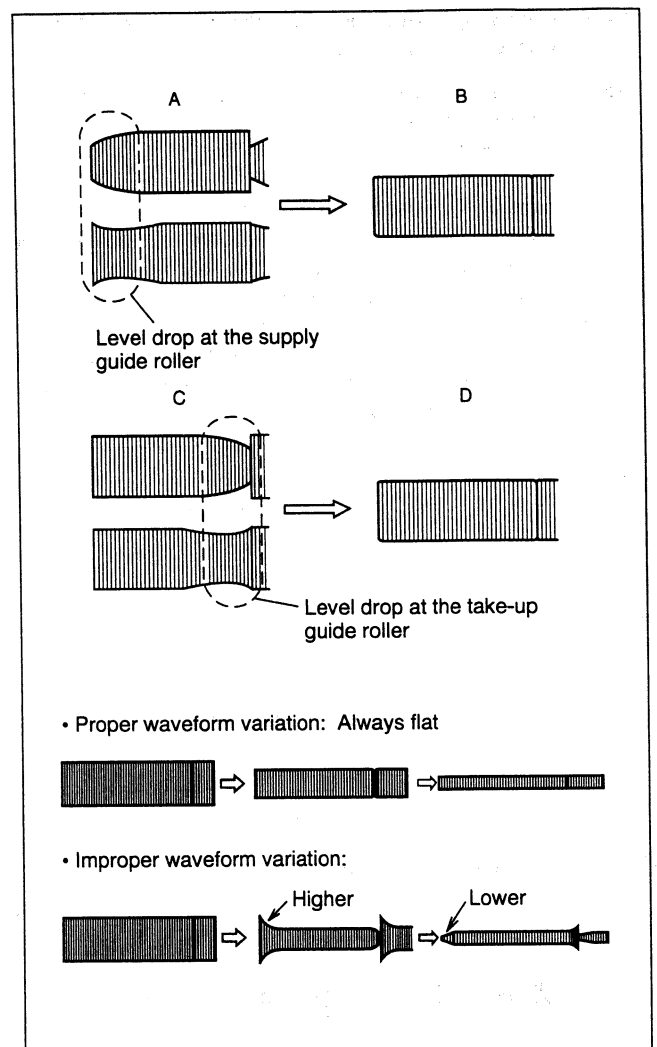


Fig. 2-4-3

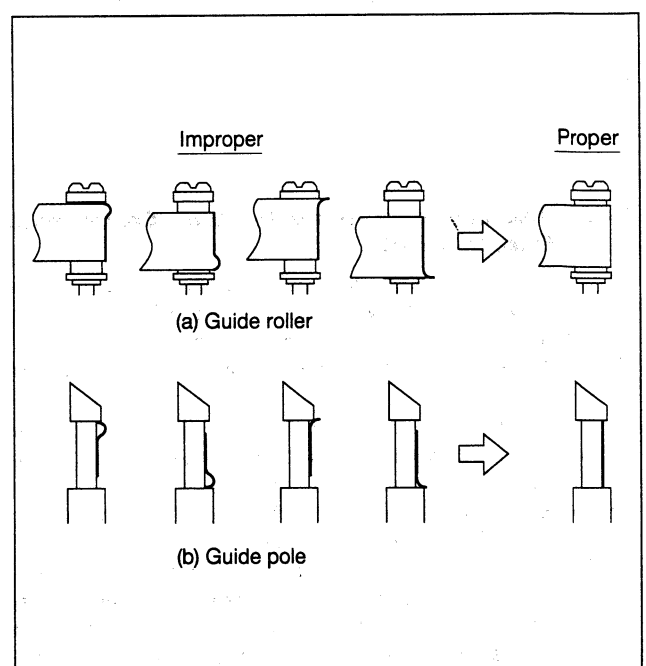


Fig. 2-4-4

2.4.2 Checking/Adjustment of the Height and Tilt of the Audio Control Head

Note: Set a temporary level of the height of the A/C head in advance to make the adjustment easier. (See Fig.2-2-14)

- (1) Connect CH-1 of the oscilloscope to AUDIO OUT and CH-2 to TP4001 (CTL P) of the main board and observe the waveforms on both channels in the ALT mode.
- (2) Play the alignment tape MHP and adjust it by turning screws (1), (2) and (3) little by little until the waveform of both the audio output signal and the control pulse reach maximum. Screw (1) and screw (3) are for adjustment of tilt and screw (2) for azimuth.

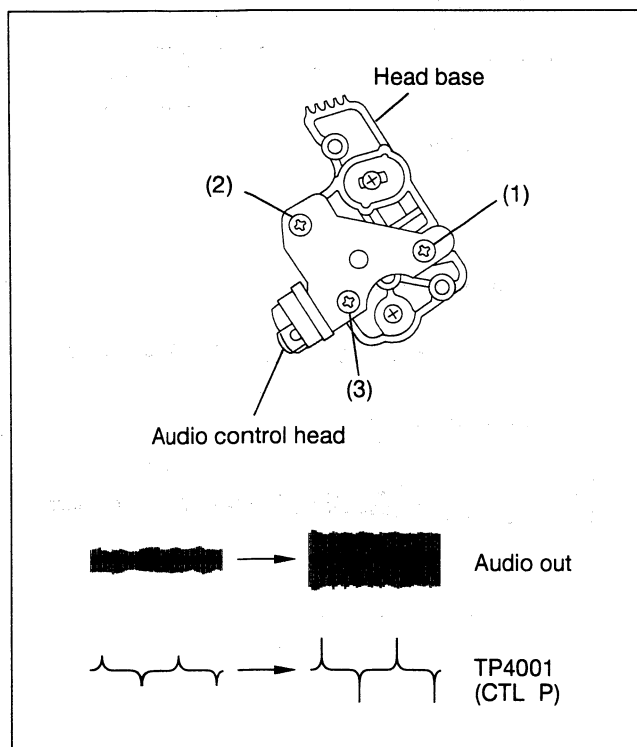


Fig. 2-4-5

2.4.3 Checking/Adjustment of the Audio Control Head Phase (X-Value)

- (1) Connect the oscilloscope to TP106(PB FM/COL) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
- (2) Play the alignment tape MHP and observe the FM waveforms.
- (3) Press the channel buttons (+) and (-) buttons simultaneously during playback to enter the manual tracking mode (This also brings tracking to the center.)
- (4) Loosen screws (4) and (5) so that the A/C head position bit (PTU94010) is set as indicated in Fig.2-4-6.
- (5) Turn the A/C head position and first move the audio control head fully up to the capstan head. Then gradually return the audio control head toward the drum and stop it where the FM waveform reaches its maximum for the first time. Then tighten screw (4) temporarily.

- (6) Then play the alignment tape MHP-L.
- (7) Press the channel buttons (+) and (-) buttons simultaneously during playback to enter the manual tracking mode (This also brings the tracking to the center.)
- (8) Perform the tracking operation and make sure that the FM waveform is at its maximum.
- (9) If it is not at maximum, loosen the temporarily tightened screw (4) and turn the A/C head position bit to bring the audio control head to a position, around where the waveform reaches its maximum for the first time. Then tighten screws (4) and (5).

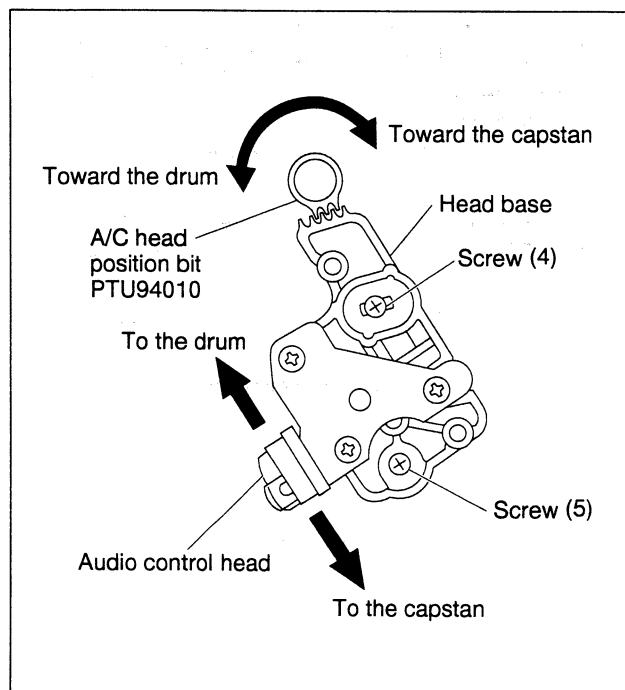


Fig. 2-4-6

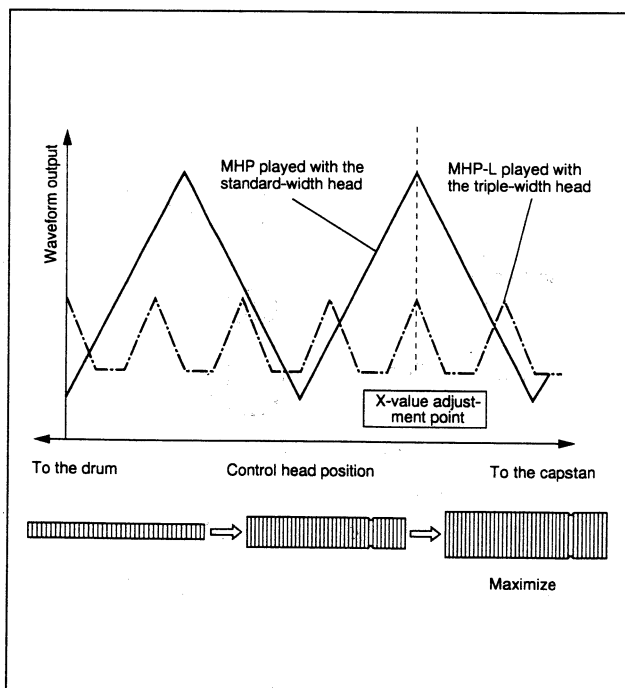


Fig. 2-4-7

2.4.4 Checking the Triple-width Auto Tracking

Note: Set the remote control cable of the video recorder to A mode.
(The unit set in B mode does not accept the remote control cable of the presetting unit.)

- (1) Connect the oscilloscope to TP106(PB FM/COL) of the main board assembly and to TP111(D.FF) of the main board assembly for external sync connection.
- (2) Playing the alignment tape MHP and observing the FM waveform, make sure that the auto tracking operation is complete.
- (3) Press the button "D" of the presetting unit twice.
- (4) Make sure that the MHP-L is not ejected.
- (5) If ejected, again perform the phase (X-value) adjustment of the audio control head.

2.4.5 Checking/Adjustment of the Tension Pole

- (1) Check the back tension cassette gauge (PUJ48076-2) to make sure that the indicator points to 29 - 46 g-cm.
- (2) If the indicated value is outside this range, carry out the following adjustment steps.
 - 1) Select the mechanism servicing mode. (See 1.5 MECHANISM SERVICE MODE)
 - 2) While in the Play mode, turn the adjustment pin with a straight-slot screwdriver while taking care not to touch the 2.5 mm dia. pole. (See Fig.2-4-8).

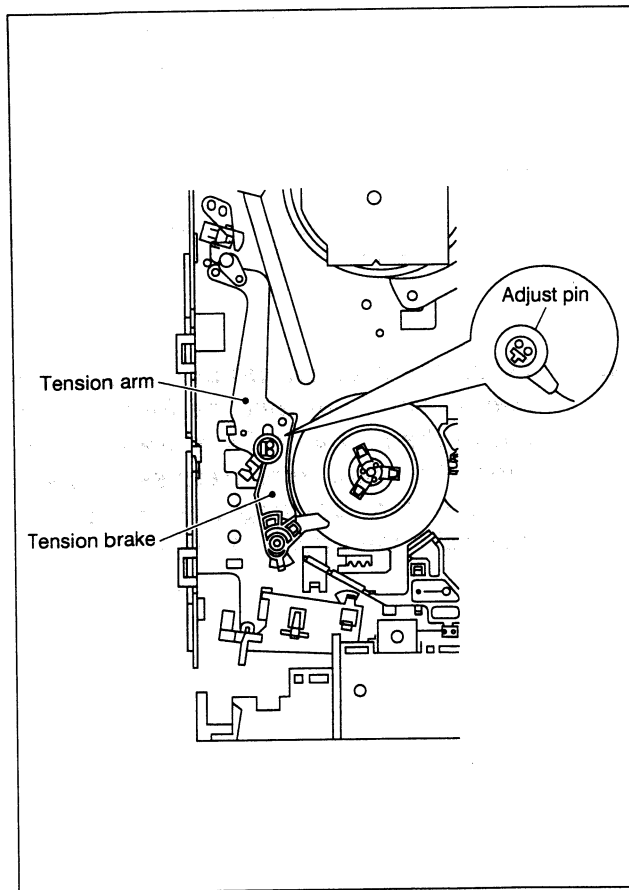


Fig. 2-4-8

2.4.6 Adjustment of the Tension Stud

- (1) Adjust so that the left side of the tension stud is on the extension of the notch line of the main deck as indicated in Fig.2-4-9.

Note: Adjustment is not usually necessary for the tension stud. Perform this adjustment only when it is out of position.

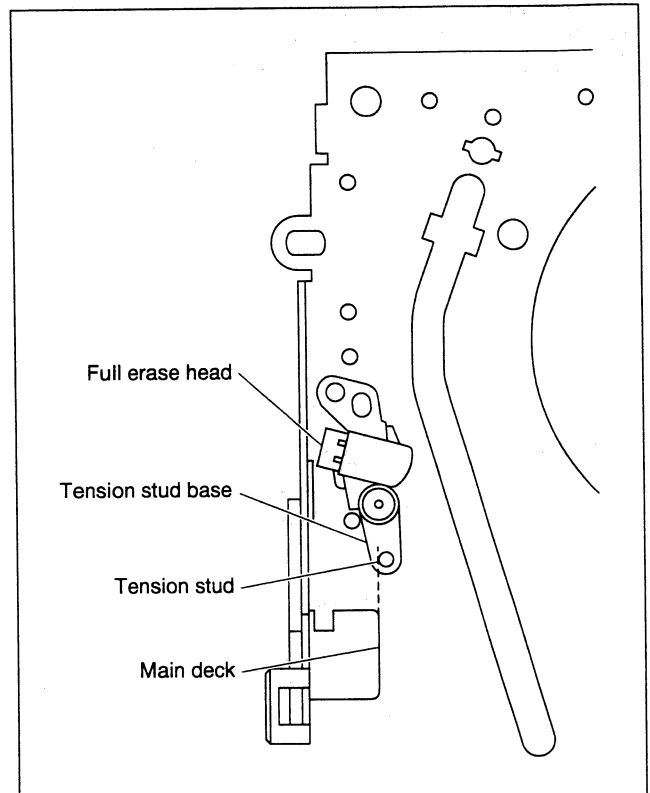


Fig. 2-4-9

2.4.7 Main Brake Torque Adjustment

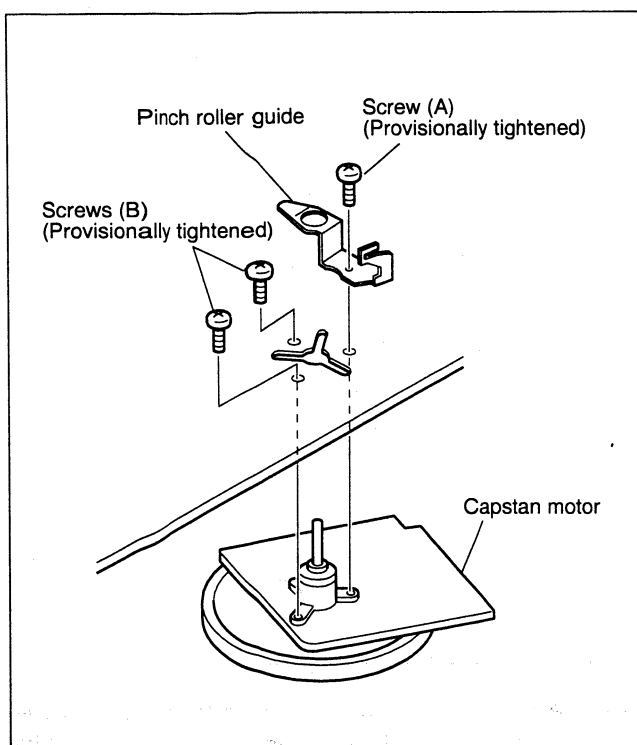
Note: Adjustment of the main brake torque is required after the adjustment pin has been removed or the main brake or the reel base on the supply or take-up side have been replaced, removed or attached.

- (1) Rotate the pulley of the loading motor by hand to align the mark ▼ on the loading arm gear shaft with the ST marking on the control plate (i.e. set to the STOP mode position).
- (2) Insert a torque gauge (PUJ48075-2) into the reel base on the side to be played, hold the torque gauge lightly, rotate it clockwise when measuring the supply side torque or counterclockwise when measuring the take-up side torque, and read the value indicated at the moment the reel base starts to slip.
- (3) Make sure that the main brake torque values on the supply and take-up sides are both between $39.2 - 78.4 \times 10^{-3} \text{ N-m}$ (400 - 800 gf-cm). If the value is outside the specified range, adjust to the specified value by rotating the adjustment pin.
If an adjustment by using the adjustment pin is not possible, replace the main brake.

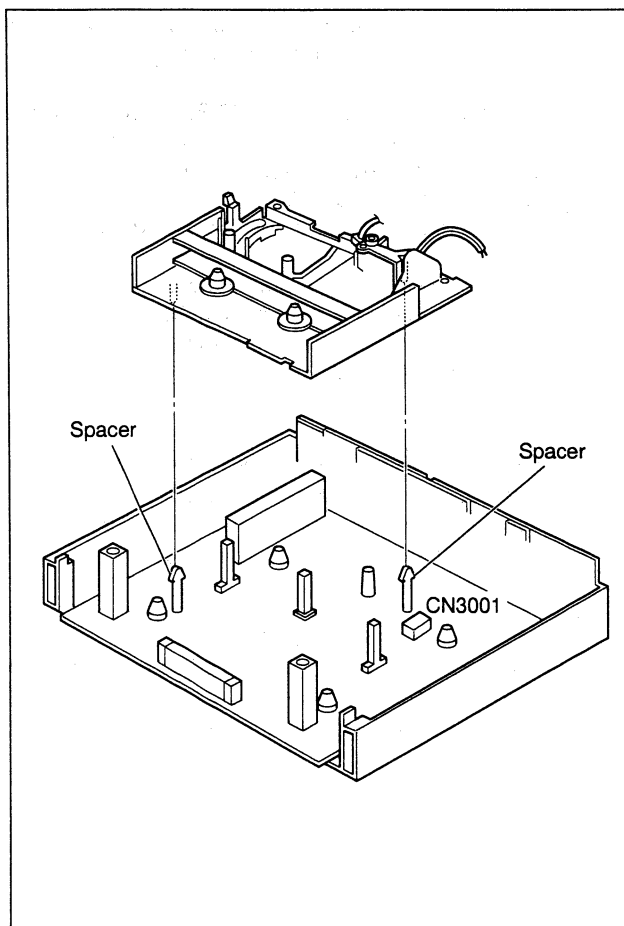
How to Mount the Capstan Motor (Centering the Mounting Position)

When the capstan motor has once been removed and then reinstalled out of the initial correct position in the rotational direction, the capstan motor current may be unstable during operation in high or low temperatures. This may result in greater Wow & Flutter and occasionally in power breakdown because of current over - load. Install the capstan motor while following the procedure given below.
(The capstan motor is centrally located when the unit is shipped from the factory.)

1. Provisionally tighten one screw (A) together the pinch roller guide and the two screws (B) securing the capstan motor.



2. Install the mechanism to which the capstan motor is provisionally fastened on the bottom chassis which incorporates the Main board assembly. (No need to tighten the screws for mounting the mechanism)
Make sure that all the connectors for the mechanism and the Main board are correctly installed.



3. Securely tighten the three screws (A), especially making sure that the connector CN3001 of the capstan motor is correctly mounted.

Note: When the capstan motor has been replaced with a new one, perform recording in the LP mode for at least 2 minutes at normal temperatures immediately before starting the FF/REW or SEARCH operations (Aging).

PLAY

P



SECTION 3 ELECTRICAL ADJUSTMENT

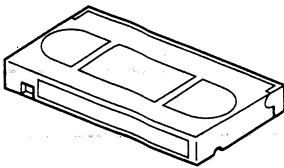
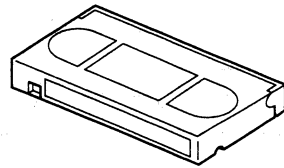
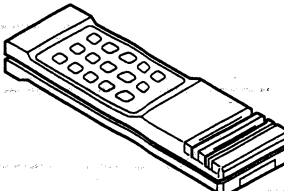
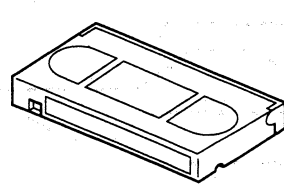
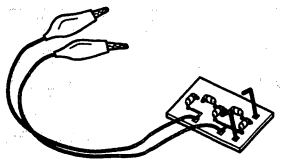
3.1 PRECAUTION

Electrical adjustment are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also do not attempt these adjustments unless the proper equipments is available.

3.1.1 Required test equipment

- ① Color television or monitor
- ② Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- ③ Frequency counter
- ④ Digital voltmeter
- ⑤ Signal generator: RF/IF sweep/maker
- ⑥ Signal generator: NTSC color bar, staircase
- ⑦ Recording tape
- ⑧ Digit-key remote controller(provided)

3.1.2 Required adjustment tools

Alignment tape (SP, staircase) MHP	Alignment tape (EP, staircase) MHV-2
	
Presetting unit PTU94008	Alignment tape (S-VHS, SP/EP, color bar) MH-1H
	
LPF PTU93006	
	

3.1.3 Color bar signal, color bar pattern

● Color bar signal

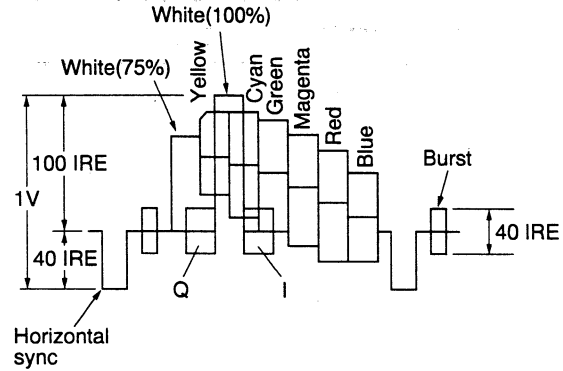


Fig.3-1-1 Color bar signal waveform

● Color bar pattern

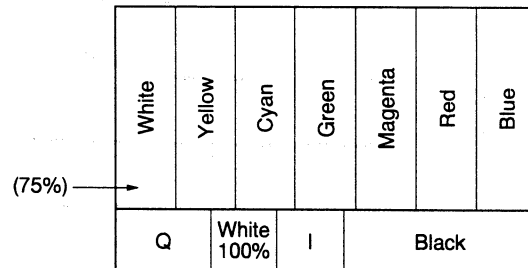


Fig.3-1-2 Color bar pattern

Note:

The system control circuit of this model has an automatic recognition about the ON-OFF control of the **DOCTOR SYSTEM**.

3.2 SERVO CIRCUIT

- Notes:**
- Unless otherwise specified, all measurement point and adjustment parts are located on the MAIN BOARD.
 - Set VCR to the mode A by remote controller.
 - Use only buttons "O", depressing other buttons during adjustment may cause adjustment errors.

3.2.1 PB switching point

Signal	• Alignment tape [MHP], Stairstep
Mode	• PB
Equipment	• Oscilloscope
Measurement point	• VIDEO OUT TERMINAL
Trigger slope (-)	• TP111 (DRUM FF)
Adjustment tool	• Presetting unit [PTU94008]
Specification	• $6.5 \pm 0.5H$

- (1) Playback the stairstep signal of the alignment tape.
- (2) Connect an oscilloscope to VIDEO OUT TERMINAL and TP111 (negative slope), and then observe VIDEO OUT TERMINAL.
- (3) Press the "O" button of the presetting unit.
- (4) The adjustment is performed automatically. Once the adjustment is performed, the VCR will go into the STOP mode.
- (5) Playback the alignment tape again, confirm the switching point (See Fig. 3-2-2).

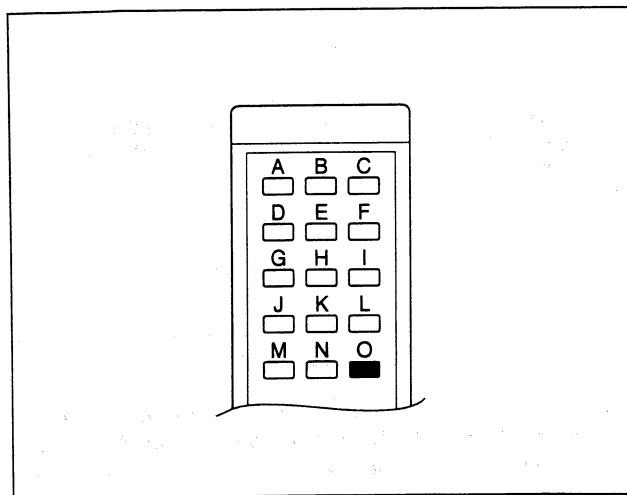


Fig. 3-2-1 Presetting unit

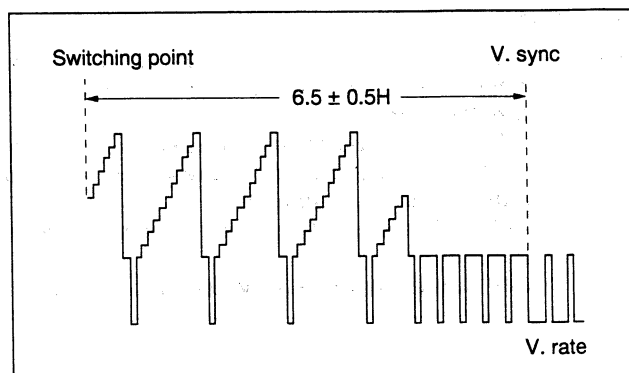


Fig. 3-2-2 PB switching point

3.2.2 Slow tracking preset

Signal	• Tuner or color bar
Mode	• SP/EP : REC → PB(SLOW) • S-VHS
Equipment	• TV-Monitor
Adjustment tool	• Presetting unit (PTU94008)
Specification	• Minimum noise

- Notes:**
- Set VCR to the mode A by remote controller.
 - Use only buttons "B" and "C", depressing other buttons during adjustment may cause adjustment errors.

- (1) Record a color bar signal in the SP mode.
- (2) Playback recorded signal on the FWD slow mode.
- (3) Observe the display on the TV monitor and adjust for optimum noise condition (best tracking) by depressing "B" or "C" buttons of the presetting unit.
- (4) Depress the STOP button.
- (5) Confirm that the bar noise is not visible on the TV monitor in the slow mode.
- (6) Repeat steps (2) to (6) in the REV slow mode.
- (7) Repeat steps (2) to (6) in the EP mode.

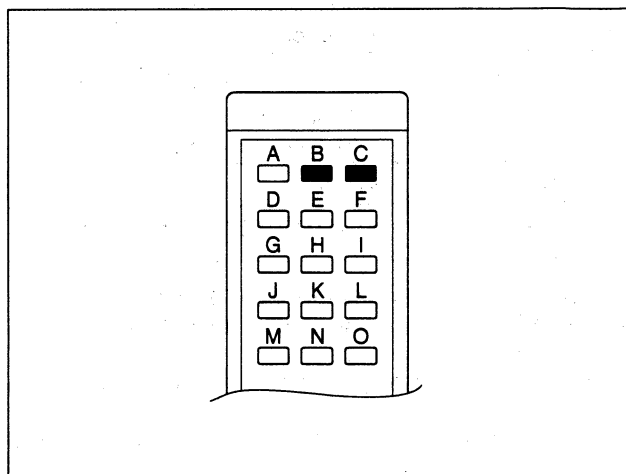


Fig. 3-2-3 Presetting unit

3.3 VIDEO CIRCUIT

- Notes:
- Unless otherwise specified, all measurement point and adjustment parts are located on the MAIN BOARD.
 - VIDEO circuit adjustments are performed by the EVR system by use of the presetting unit and digit-key remote controller.
 - S-INPUT means Y/C separated video signal in the chart.
 - Set VCR to the mode A by remote controller.

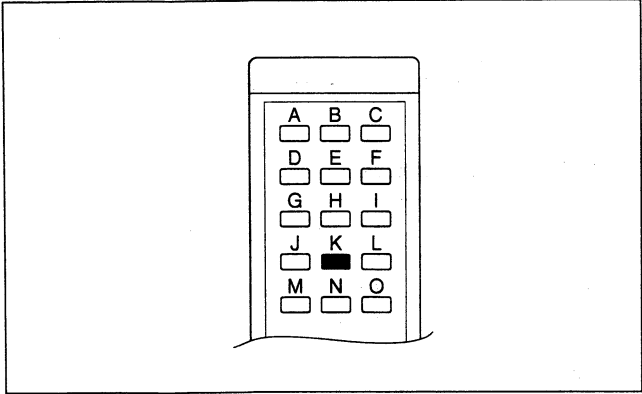


Fig. 3-3-1 Presetting unit

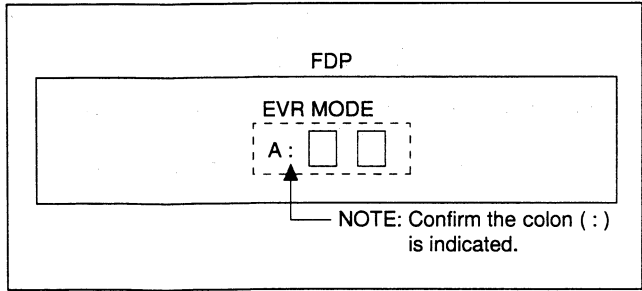


Fig. 3-3-2 EVR mode

3.3.1 Y level

Signal	• Color bar
Mode	• EE
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL(75Ω TERMINATION)
Adjustment tool	• Presetting unit • Digit-key remote controller
EVR mode	• A : 11
Specification	• 1.00 ± 0.03 Vp-p (terminated)

- (1) Connect an oscilloscope to Y OUT TERMINAL.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 2 seconds.
- (3) Set "A : 11" pressing 1 digit key twice of the remote controller.
- (4) Adjust CH "▲" or "▼" button for 1.00 ± 0.03 Vp-p (See Fig. 3-3-3).
- (5) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

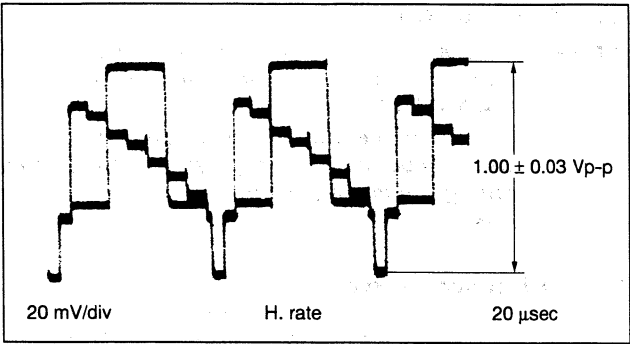


Fig. 3-3-3 EE Y level

3.3.2 SP/EP REC color level

Signal	• Alignment tape [MH-1H] • Color bar
Mode	• PB • REC → PB : SP/EP • S-VHS
Equipment	• Oscilloscope
Measurement point	• PB color out
Trigger slope (-)	• TP111 (DRUM FF)
Adjustment tool	• Presetting unit • Digit-key remote controller • LPF fixture (PTU93006)
EVR mode	• A : 2
Specification	• "B" x 150 ± 5% : SP • "B" x 110 ± 5% : EP

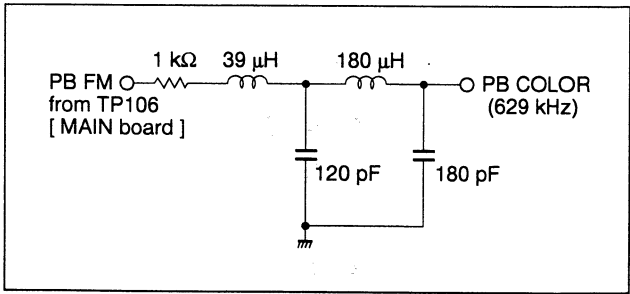


Fig. 3-3-4 LPF

- (1) Connect an oscilloscope to PB COLOR of a LPF(refer to Fig. 3-3-4) and TP111(negative slope) on the MAIN board.
- (2) Playback the SP color bar signal of MH-1H alignment tape.
- (3) Set the tracking of the Front panel to the Auto tracking off position by simultaneously pressing the CH "▲" and "▼" buttons.
- (4) Adjust by pressing the CH "▲" or "▼" buttons of the Front panel for maximum level of the color waveform and make a note of the higher color level "B".
- (5) Press the STOP/EJECT button and eject the MH-1H alignment tape.
- (6) Set EVR mode by pressing "K" button of the presetting unit more than 2 seconds.

- (7) Set "A : 2" by pressing 2 digit key of the remote controller.
- (8) Before recording, adjust CH "▲" or "▼" button of the remote controller so that the higher level channel becomes $150 \pm 5\%$: SP ($110 \pm 5\%$: EP) of the note "B" level during playback as shown in Fig. 3-3-5.
- (9) Record a color bar signal in SP (EP) mode, and playback recorded color bar signal.
- (10) Set normal VCR mode by pressing "K" button again so adjustment data is memorized.

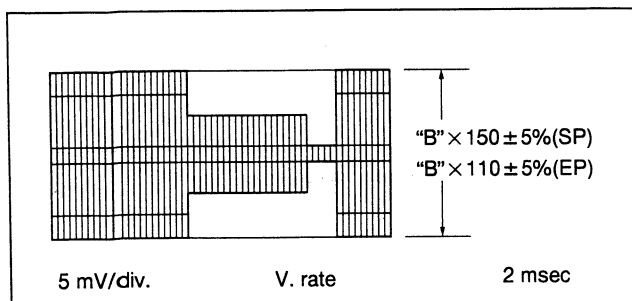


Fig. 3-3-5 REC color level

3.3.3 PB Y level (S-VHS/VHS)

Signal	• Color bar • S-VHS/VHS
Mode	• PB : SP
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL (75Ω TERMINATION)
Adjustment tool	• Presetting unit • Digit-key remote controller
EVR mode	• A : 11
Specification	• $1.00 \pm 0.03V_{p-p}$ (terminated)

- (1) Connect an oscilloscope to Y OUT TERMINAL.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 2 seconds.
- (3) Set "A : 11" pressing 1 digit key twice of the remote controller.
- (4) Record a color bar signal in the S-VHS mode, and playback recorded color bar signal.
- (5) Adjust CH "▲" or "▼" button for $1.00 \pm 0.03V_{p-p}$ as shown in Fig. 3-3-6.
- (6) Set normal VCR mode by pressing "K" button of the presetting unit again so adjustment data is memorized.
- (7) Repeat steps (1) to (6) in the VHS mode.

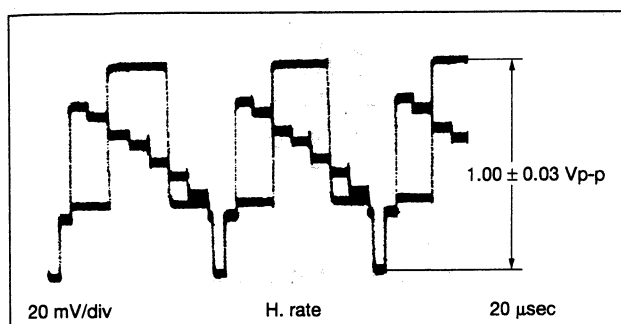


Fig. 3-3-6 PB Y level

3.3.4 S-VHS VIDEO EQ

Signal	• S INPUT • Video sweep
Mode	• REC → PB : SP/EP • S-VHS • DUBBING - REC : OFF - PB : ON
Equipment	• Oscilloscope
Measurement point	• Y OUT TERMINAL (75Ω TERMINATION)
Trigger slope (-)	• TP111 (DRUM FF)
Adjustment tool	• Presetting unit • Digit-key remote controller
Specification	• 3.6 ± 0.2 scale : SP • 2.8 ± 0.2 scale : EP

- (1) Connect an oscilloscope to Y OUT TERMINAL and TP111 (negative slope).
- (2) Record a video sweep signal in S-VHS SP mode, then play it back.
- (3) Set EVR mode by pressing "K" button of the presetting unit more than 2 seconds.
- (4) Set "A : 3" by pressing 3 digit key of the remote controller.
- (5) When assuming the 100 KHz sweep signal marker on the bigger channel is four scales on the oscilloscope, adjust CH "▲" or "▼" button on the front panel or the 10-key remote control so that the 3.58 MHz is set at 3.6 ± 0.2 scale (-2 ± 0.5 dB) while observing Y OUT of the S output (See Fig. 3-3-7).
- (6) The EVR mode is canceled by pressing the "K" button after the adjustment, and the adjusted value is stored.
- (7) Also, it records and plays back the sweep signal in the EP mode.
- (8) Carry out the step (3) and (4).
- (9) When assuming the 100 kHz sweep signal marker on the bigger channel is four scales on the oscilloscope, adjust CH "▲" or "▼" button on the front panel or the 10-key remote control so that the 3.58 MHz is set at 2.8 ± 0.2 scale (-3 ± 0.5 dB) while observing Y OUT of the S output (See Fig. 3-3-7).

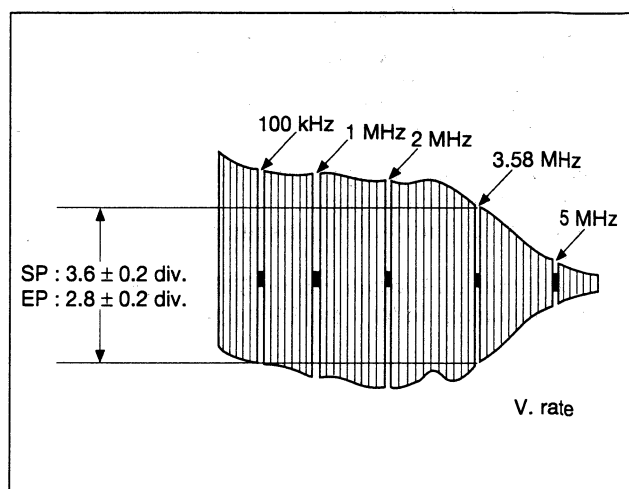


Fig. 3-3-7 S-VHS VIDEO EQ

3.3.5 D/A level

Signal	•Color bar •S-VHS
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•CN1002-28pin (Y OUT) [2D S-VHS board]
Adjustment part	•VR1201 (Y LEVEL) [2D S-VHS board]
Specification (NOTE)	•2.05 Vp-p (REFERENCE VALUE)

- (1) Connect the oscilloscope to the CN1002-28 pin(Y OUT) on the 2D S-VHS board.
- (2) Confirm the Y level value during external S input.
- (3) Switch the input signal to the external input, then adjust the VR1201 on the 2D S-VHS board so that the Y level value becomes the same level value which was confirmed at the step (2).

Note: • The adjusted value of 2.05 Vp-p is a reference value which should be obtained during external S input. The value should be adjusted to the one which was confirmed at step (2).

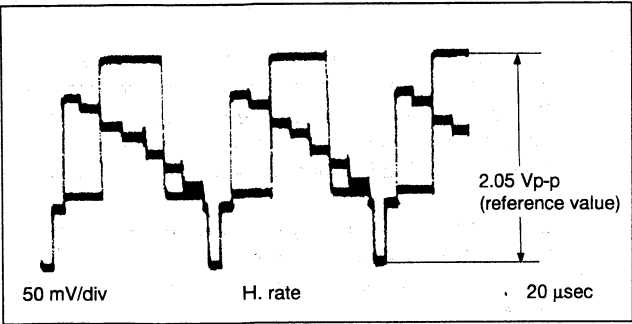


Fig. 3-3-8 D/A LEVEL

3.3.6 Auto picture

Signal	• Monoscope
Mode	• REC → PB : SP/EP • S-VHS
Adjustment tool	• Presetting unit [PTU94008]
Specification	• STOP mode

- (1) Record a monoscope signal in the SP mode.
- (2) Playback the recorded signal.
- (3) Press the "L" button of the presetting unit during playback.
- (4) Confirm that VCR will go into the STOP mode.
- (5) Repeat steps (2) to (4) in the EP mode.

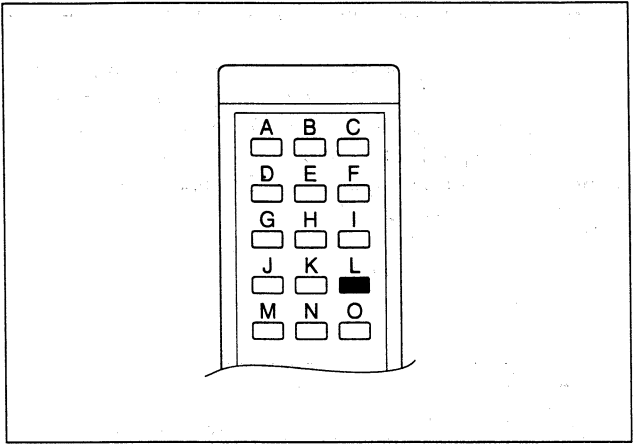


Fig. 3-3-9 Presetting unit

3.4 ON SCREEN CIRCUIT

- Notes:** • Unless otherwise specified, all measurement point and adjustment parts are located on the MAIN BOARD.
- Set VCR to the mode A by remote controller.

3.4.1 Character position

Signal	• No signal
Mode	• EE
Equipment	• TV-monitor
Adjustment tool	• Presetting unit [PTU94008] • Digit-key remote controller
Specification	• Character center

- (1) Press the MENU button and display the on screen character.
- (2) Observe TV-monitor and center position of character by pressing "H" button of the presetting unit.

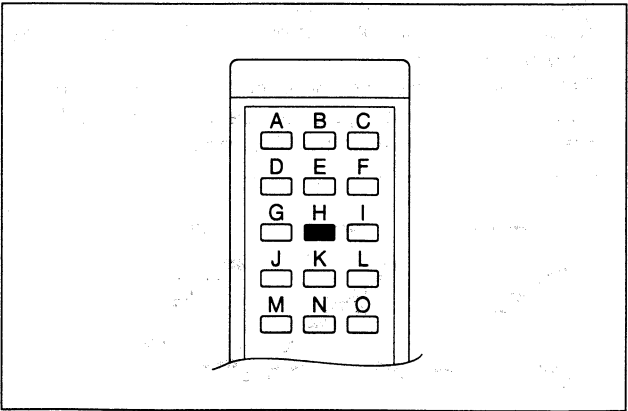


Fig. 3-4-1 Presetting unit

3.5 DEMODULATOR CIRCUIT

- Notes:**
- Unless otherwise specified, all measurement point and adjustment parts are located on the DEMODULATOR BOARD.
 - DEMODULATOR circuit adjustments are performed by the EVR system by use of the pre-setting unit and digit-key remote controller.
 - Unless otherwise specified, set an audio multiplex TV signal generator as follows;
RF signal : 70 dbu / 75 Ω , color bar 87.5% modulation.
 - Set VCR to the mode A by remote controller.
 - No signal: Connect (-)terminal of the capacitor C1505 to the GND(Ground).

3.5.1 Input level

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 20
Specification	• 500 ± 10 mVrms

- (1) Connect an audio level meter to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 20" pressing 2 and 0 digit keys of the remote controller.
- (4) Set a signal generator mode to mono 300Hz.
- (5) Adjust CH "▲" or "▼" button for 500 ± 10 mVrms.
- (6) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.5.2 Stereo VCO

Signal	• No signal
Mode	• EE Tuner
Equipment	• Frequency counter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 21
Specification	• 15.73 ± 0.1 KHz

- (1) Connect a frequency counter to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 21" pressing 2 and 1 digit keys of the remote controller.

- (4) Adjust CH "▲" or "▼" button for 15.73 ± 0.1 KHz.
- (5) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.5.3 Stereo filter

Signal	• No signal
Mode	• EE Tuner
Equipment	• Oscilloscope
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 22
Specification	• Minimum level

- (1) Connect an oscilloscope to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 22" pressing 2 digit key twice of the remote controller.
- (4) Adjust CH "▲" or "▼" button for minimum level.
- (5) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.5.4 Separation - 1

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 23
Specification	• Minimum level

- (1) Connect an audio level meter to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 23" pressing 2 and 3 digit keys of the remote controller.
- (4) Set a signal generator mode to alternate L-ch 300Hz 14% modulated.
- (5) Adjust CH "▲" or "▼" button for minimum level.
- (6) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.5.5 Separation - 2

Signal	• RF signal
Mode	• EE Tuner
Equipment	• Audio level meter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 24
Specification	• Minimum level

- (1) Connect an audio level meter to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 24" pressing 2 and 4 digit keys of the remote controller.
- (4) Set a signal generator mode to alternate L-ch 5Hz 14% modulated.
- (5) Adjust CH " ▲ " or " ▼ " button for minimum level.
- (6) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.5.6 SAP VCO

Signal	• No signal
Mode	• EE Tuner
Equipment	• Frequency counter
Measurement point	• IC1501- pin 26
Adjustment tool	• Presetting unit [PTU94008], Digit-key remote controller
EVR mode	• A : 25
Specification	• 78.67 ± 0.5 KHz

- (1) Connect a frequency counter to IC1501- pin 26.
- (2) Set EVR mode by pressing "K" button of the presetting unit more than 3 seconds.
- (3) Set "A : 25" pressing 2 and 5 digit keys of the remote controller.
- (4) Adjust CH " ▲ " or " ▼ " button for 78.67 ± 0.5 KHz.
- (5) Set normal VCR mode by pressing "K" button of the pre-setting unit again so adjustment data is memorized.

3.6 AUDIO CIRCUIT

Notes:

- Unless otherwise specified, all measurement point and adjustment parts are located on the PRE/REC BOARD.
- This adjustment should be done after the video circuit SP and EP REC color level are adjusted.
- GND(Ground) should be taken from the tuner board shield.

3.6.1 REC FM level

Signal	• AUX • VIDEO : Color bar • AUDIO : No signal
Mode	• REC → PB : EP • S-VHS
Equipment	• Oscilloscope
Measurement point	• TP2253 (A. PB. FM)
Trigger slope (-)	• TP111 (DRUM FF)
Adjustment part	• VR2251 (FMA REC FM)
Specification	• 800 ± 100 mVp-p

- (1) Connect an oscilloscope to TP2253.
- (2) Record a color bar signal without an audio signal in S-VHS EP mode then playback.
- (3) Adjust VR2251 for 800 mVp-p playback level of higher channel level before recording.
- (4) Confirm that the lower channel level is more than 550 mVp-p.

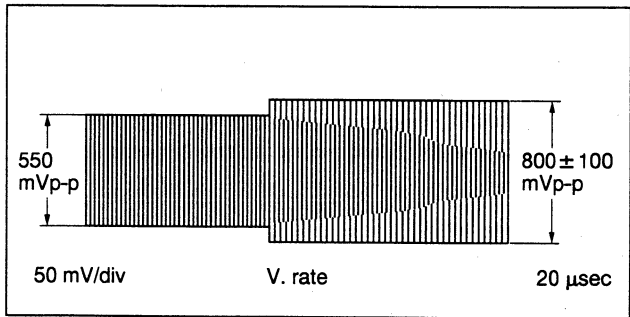


Fig. 3-6-1 Audio REC FM level

SECTION 4 CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions

The Components identified by the symbol  are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

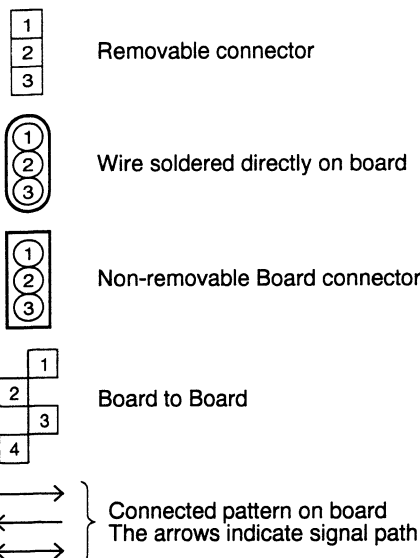
- 1) All resistance values are in ohm, 1/6 W, 1/8 W (refer to parts list).
Chip resistors are 1/16 W.
K: K Ω (1000 Ω), M: M Ω (1000K Ω)
- 2) All capacitance values are in μ F, (P: PF).
- 3) All inductance values are in μ H, (m: mH).
- 4) All diodes are 1SS133, MA165 or IN4148M (refer to parts list).

2. Indications of control voltage

AUX : Active at high

AUX or AUX(L) : Active at low

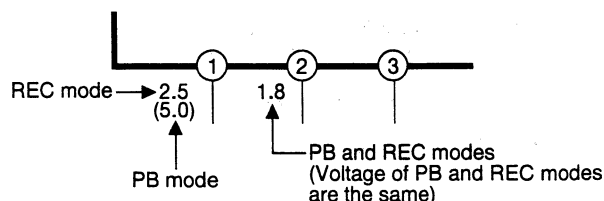
3. Interpreting Connector indications



4. Voltage measurement

- 1) Video circuits
REC : Colour bar signal in SP mode, normal VHS mode
PB : Alignment tape, colour bar SP mode, normal VHS mode
— : Unmeasurable or unnecessary to measure
- 2) Audio circuits
REC : 1KHz, -8 dBs sine wave signal in SP mode, Normal VHS mode
PB : REC then playback it
- 3) Movie Camera circuits
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode

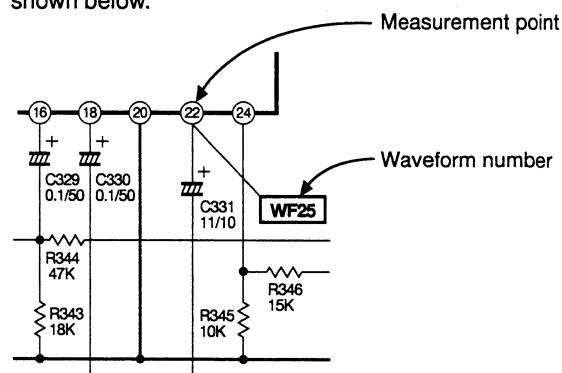
- 4) Indication on schematic diagram
Voltage Indications for REC and PB mode on the schematic diagram are as shown below.



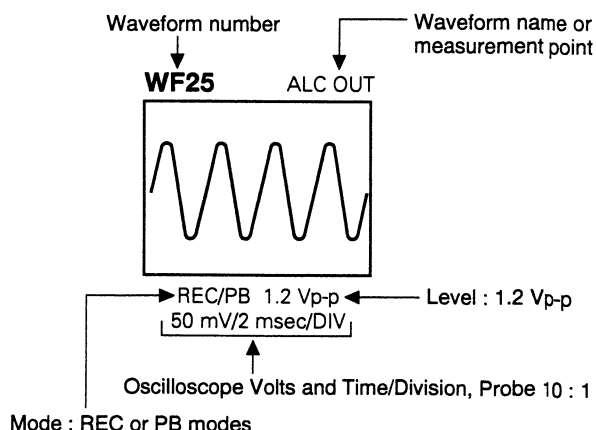
Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

- 1) Video circuits
REC : Colour bar signal in SP mode, normal VHS mode
PB : Alignment tape, colour bar SP mode, normal VHS mode
- 2) Audio circuits
REC : 1KHz, -8 dBs sine wave signal in SP mode, normal VHS mode
PB : REC then playback it
- 3) Movie Camera circuits
Measured using a correctly illuminated gray scale or colour bar test charts in the E-E mode
- 4) Indication on schematic diagram
Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



3. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Capstan servo path
- Drum servo path

(Example)

- R-Y Playback R-Y signal path
- Y Recording Y signal path

7. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



8. Indication of the parts not mounted on the circuit board

“OPEN” is indicated by the parts not mounted on the circuit board.



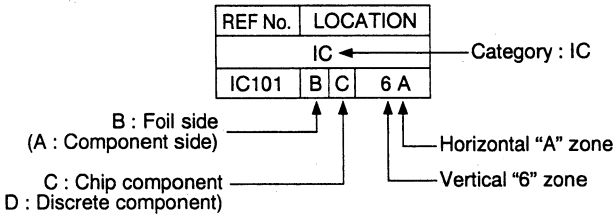
CIRCUIT BOARD NOTES

1. Foil and Component sides

- 1) Foil side (B side) :
Parts on the foil side seen from foil face (pattern face) are indicated.
- 2) Component side (A side) :
Parts on the component side seen from component face (parts face) indicated.

2. Parts location guides

Parts location are indicated by guide scale on the circuit board.



Note:

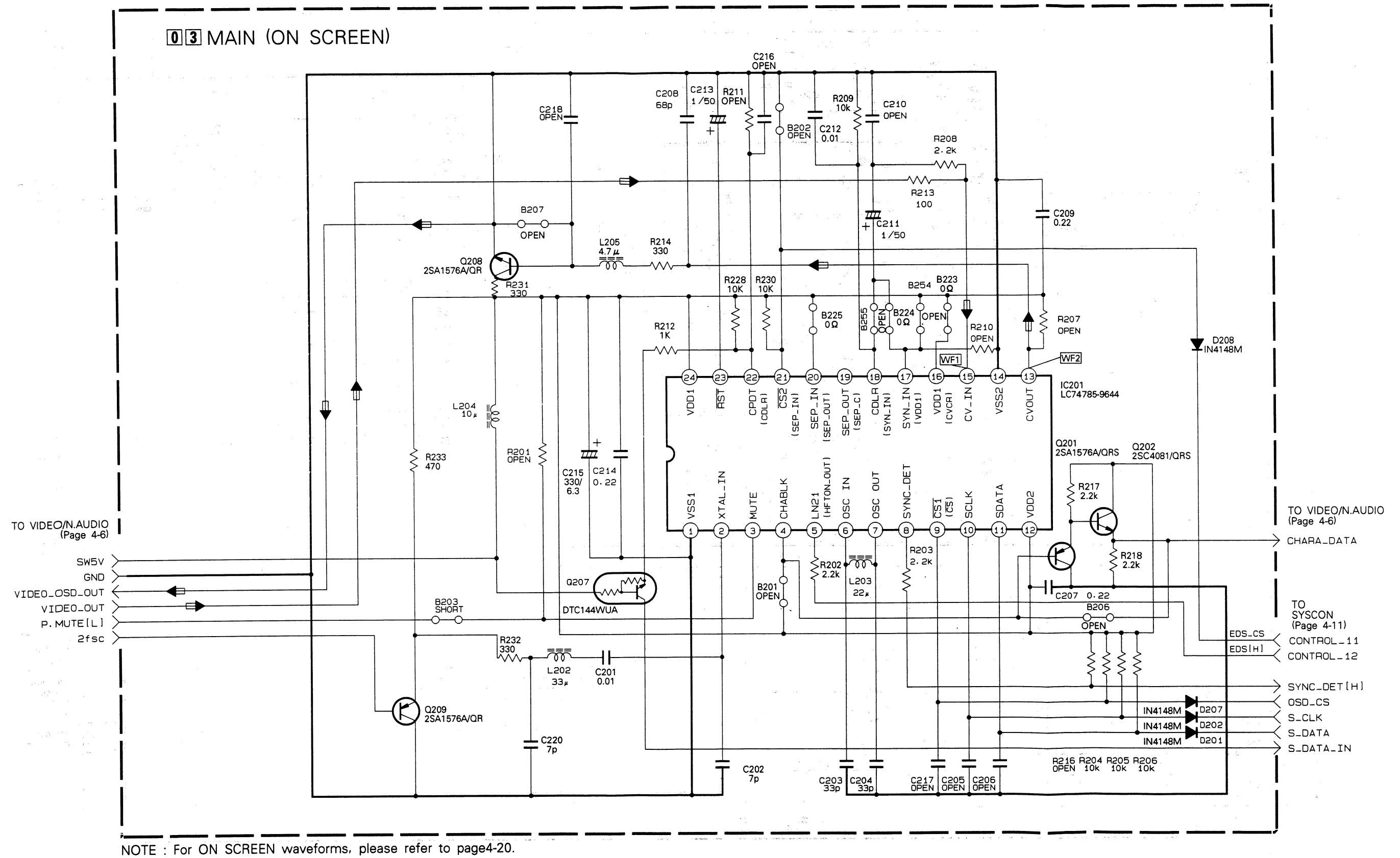
For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).



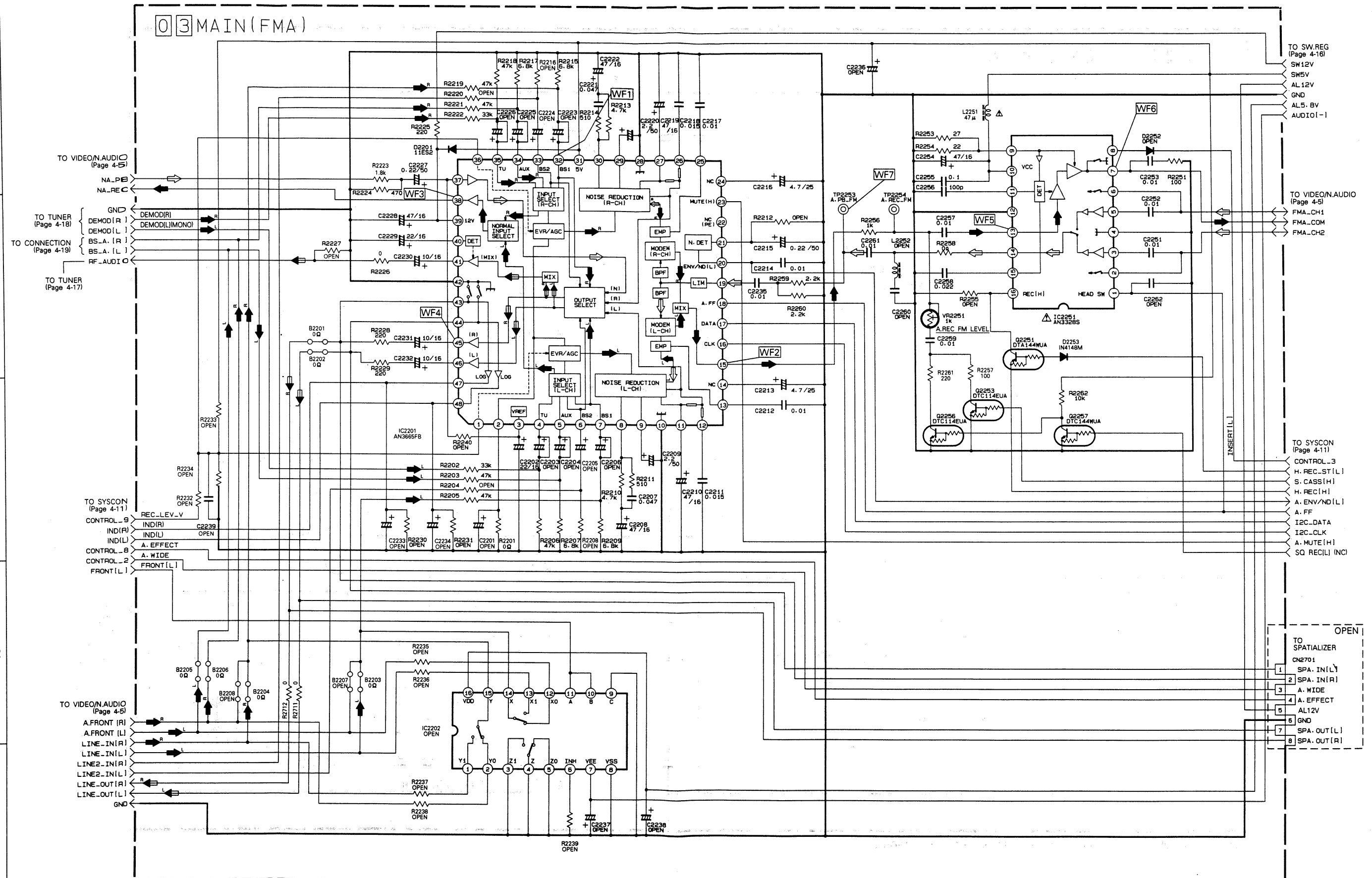
NOTE : For VIDEO/N.AUDIO waveforms, please refer to page4-20.

NOTE : For VIDEO/N.AUDIO waveforms, please refer to page4-20.

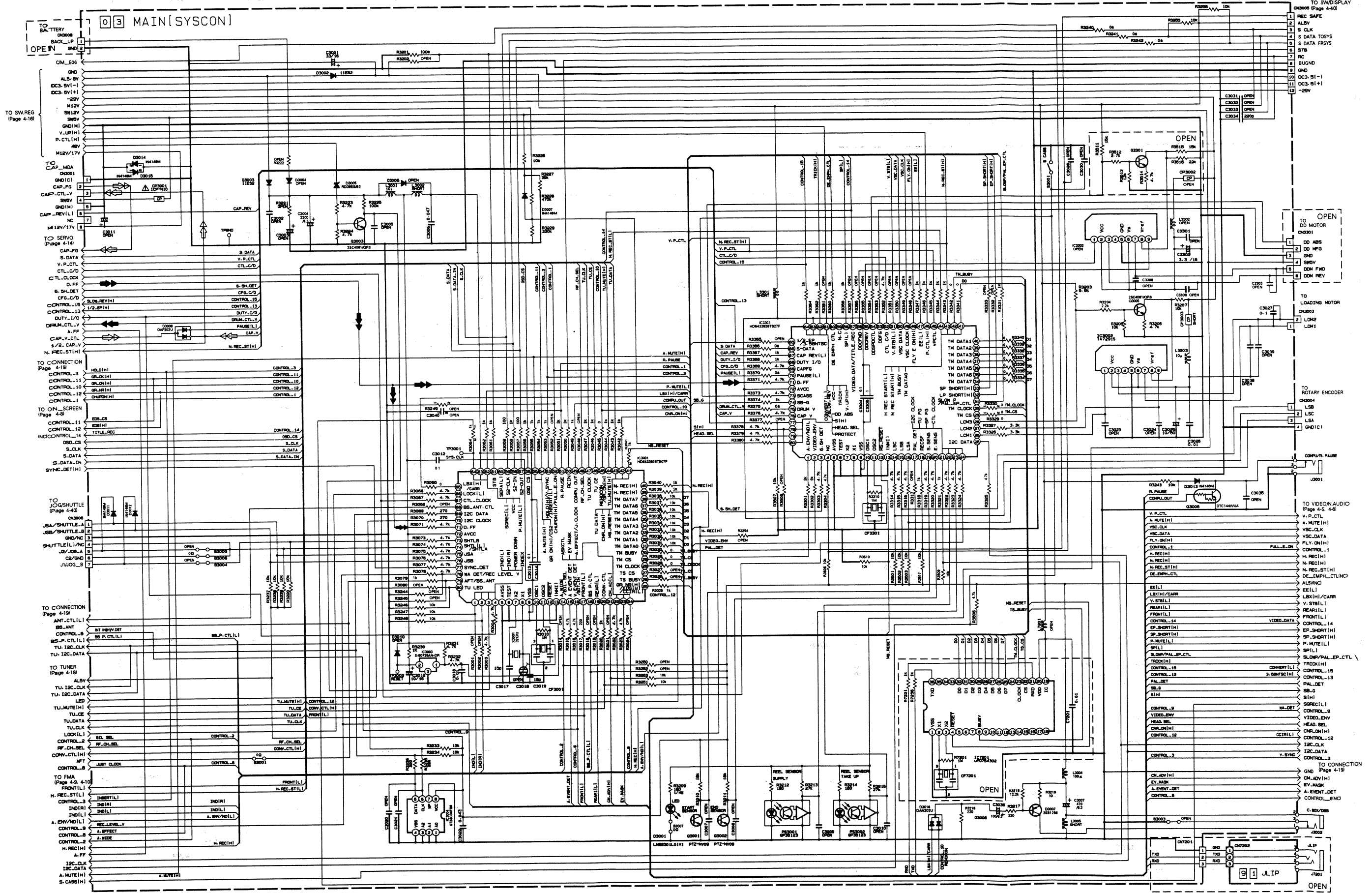
4.3 ON SCREEN SCHEMATIC DIAGRAM



4.4 FMA SCHEMATIC DIAGRAM



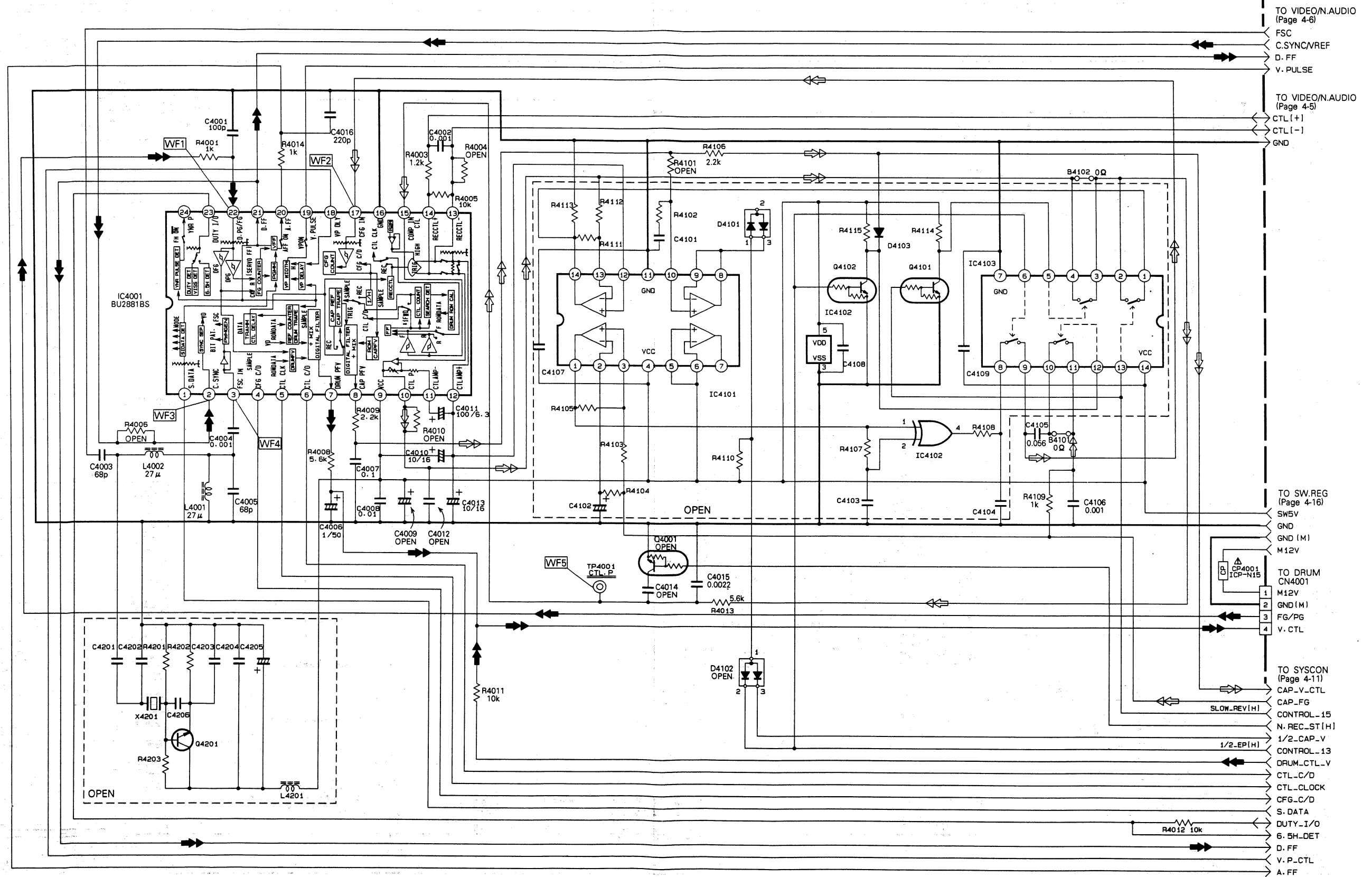
4.5 SYSCON SCHEMATIC DIAGRAM



NOTE : The system control circuit of this model has an automatic recognition about the ON-OFF control of the DOCTOR SYSTEM.

4.6 SERVO SCHEMATIC DIAGRAM

```
03 MAIN(SERVO)
```



NOTE : For SERVO waveforms, please refer to page4-20.

A

B

C

D 4-13

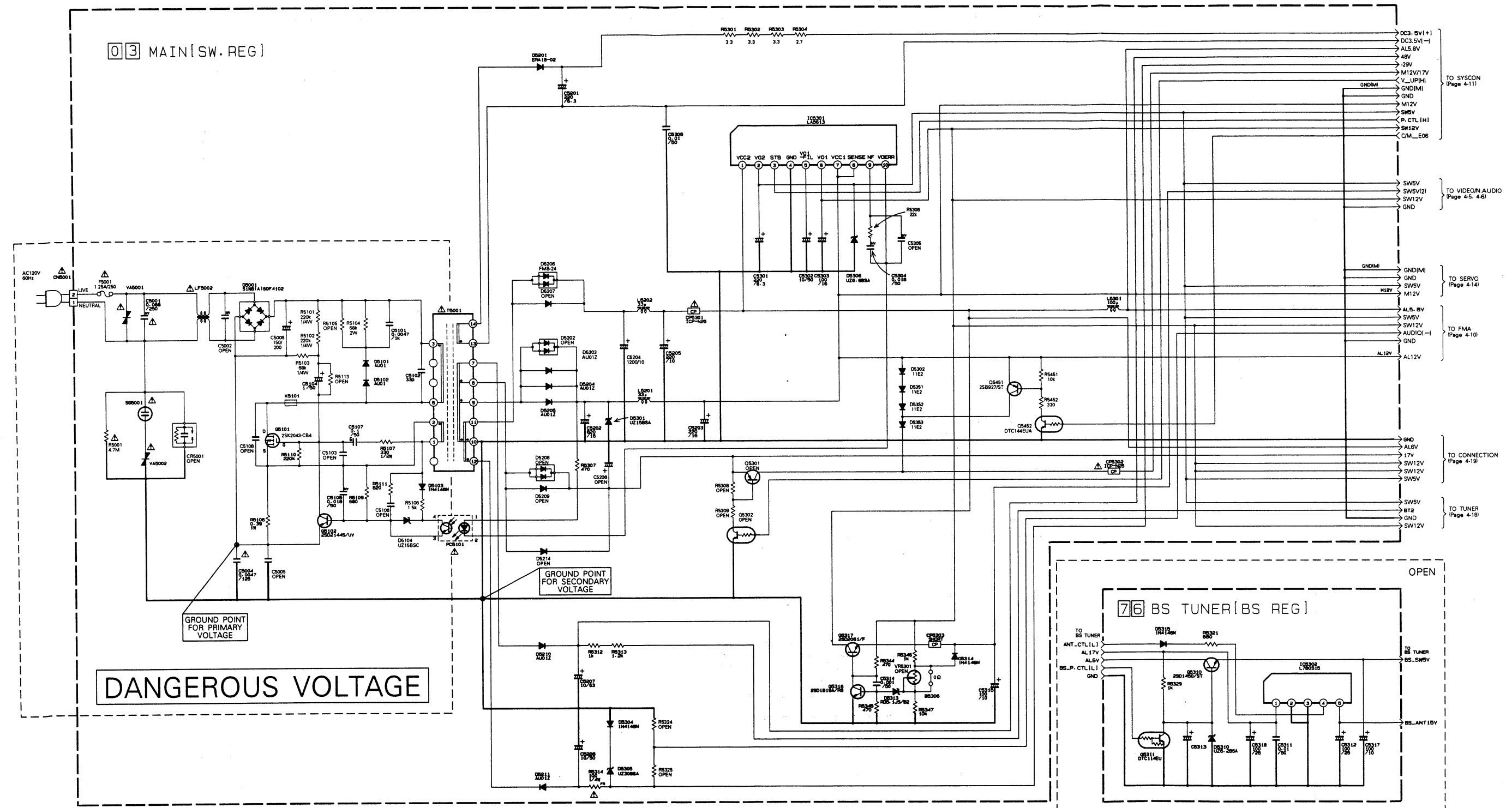
4-14

E

F

Q

H



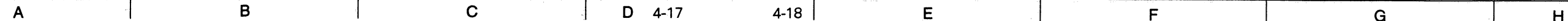
5

4

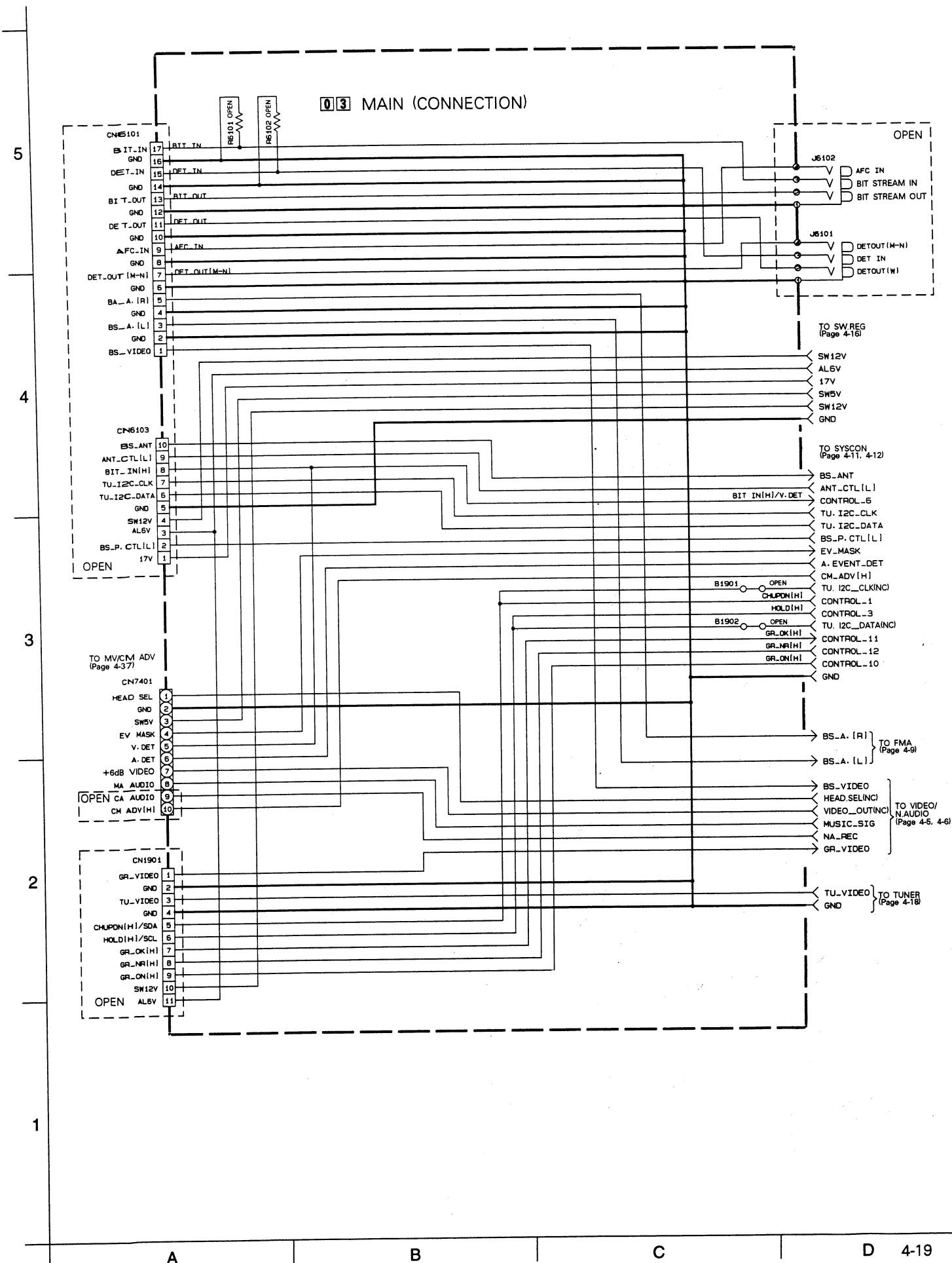
3

2

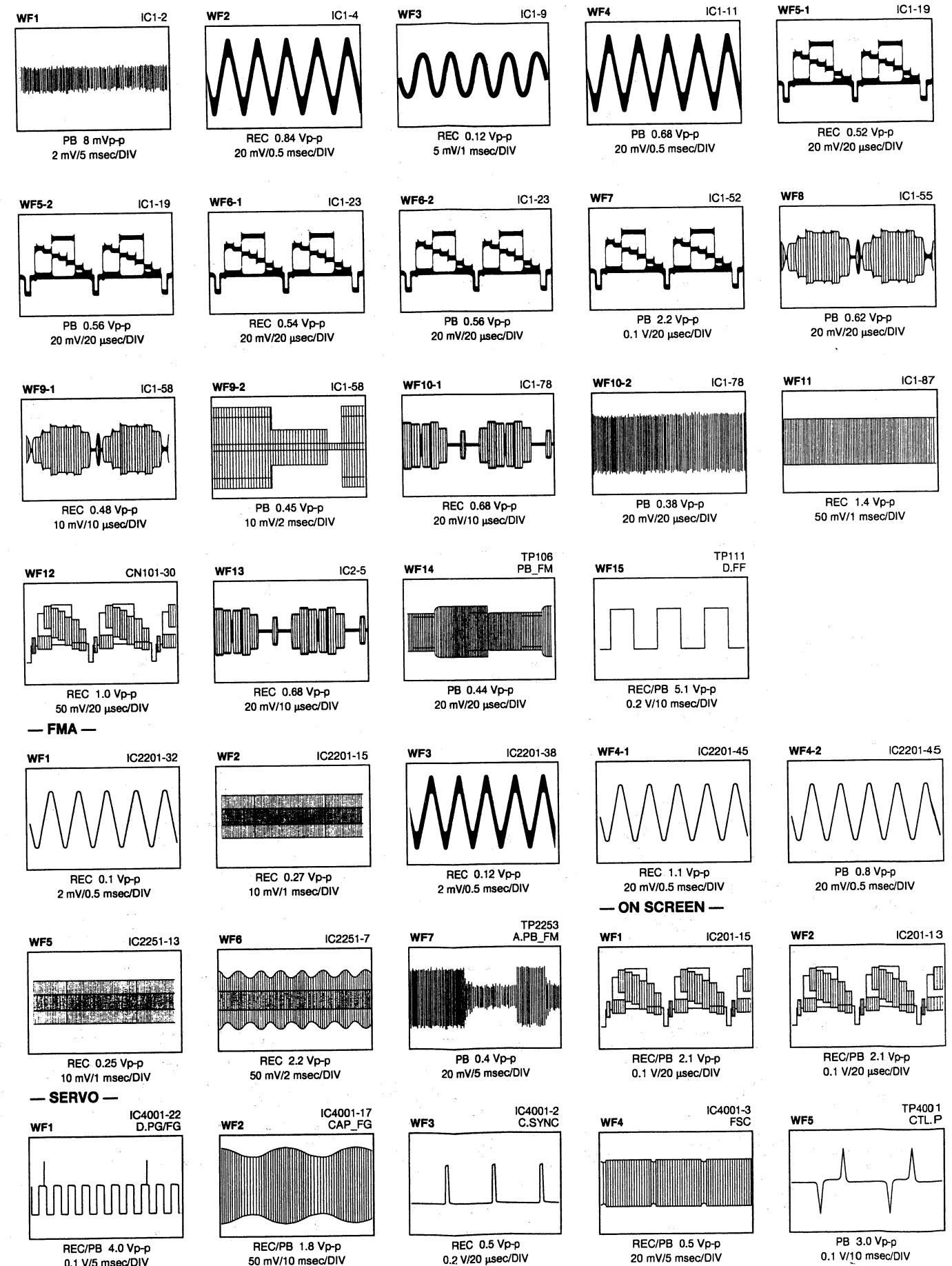
1



4.9 CONNECTION SCHEMATIC DIAGRAM



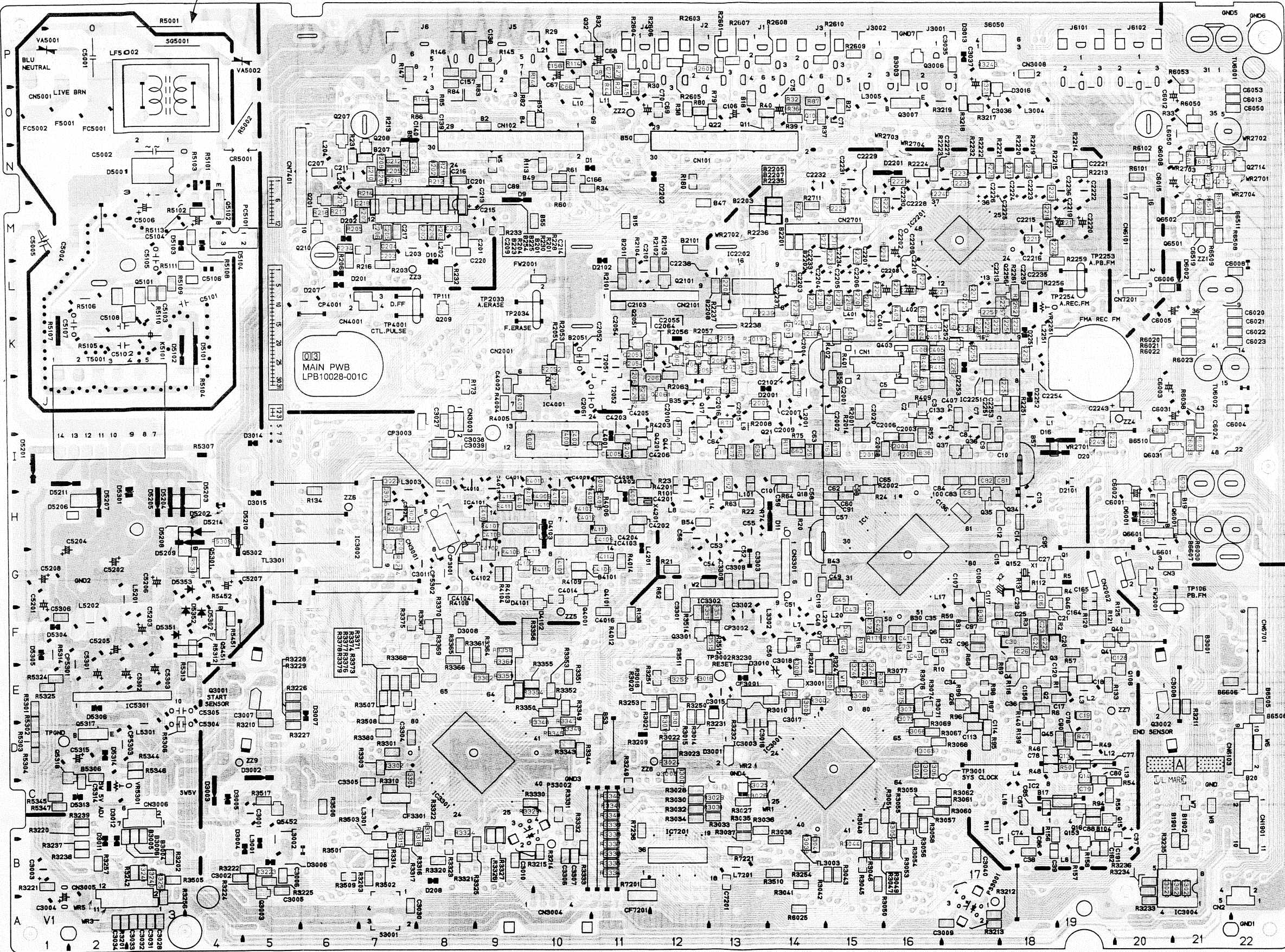
WAVEFORMS — VIDEO/NAUDIO —



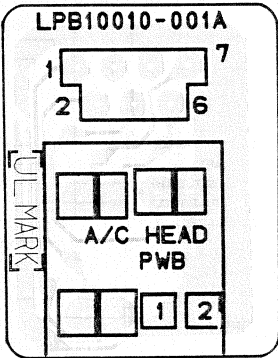
4.10 MAIN, A/C HEAD AND LOADING MOTOR CIRCUIT BOARDS

DANGEROUS VOLTAGE

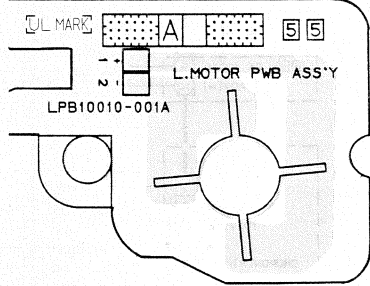
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).



— A/C HEAD —



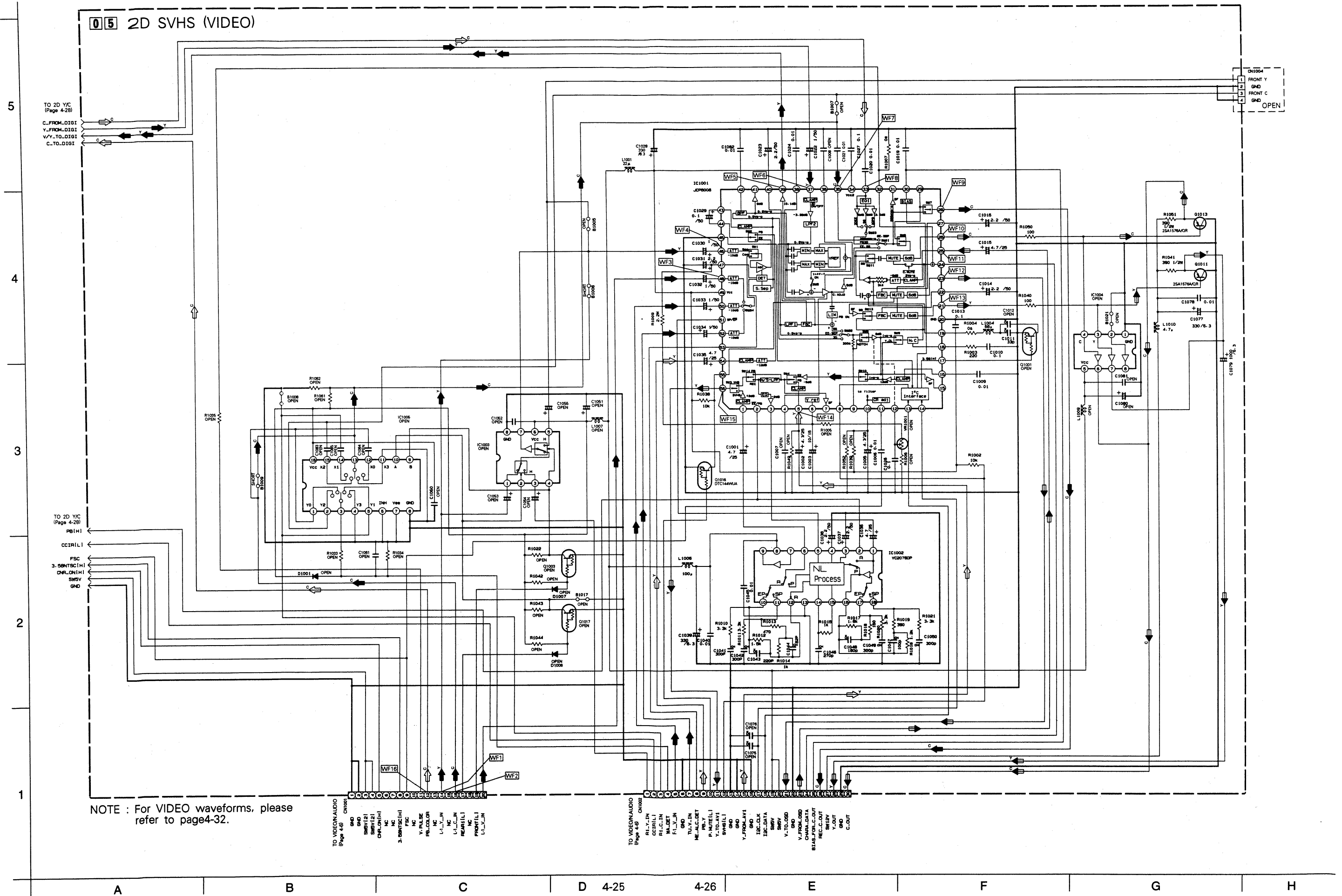
— LOADING MOTOR —



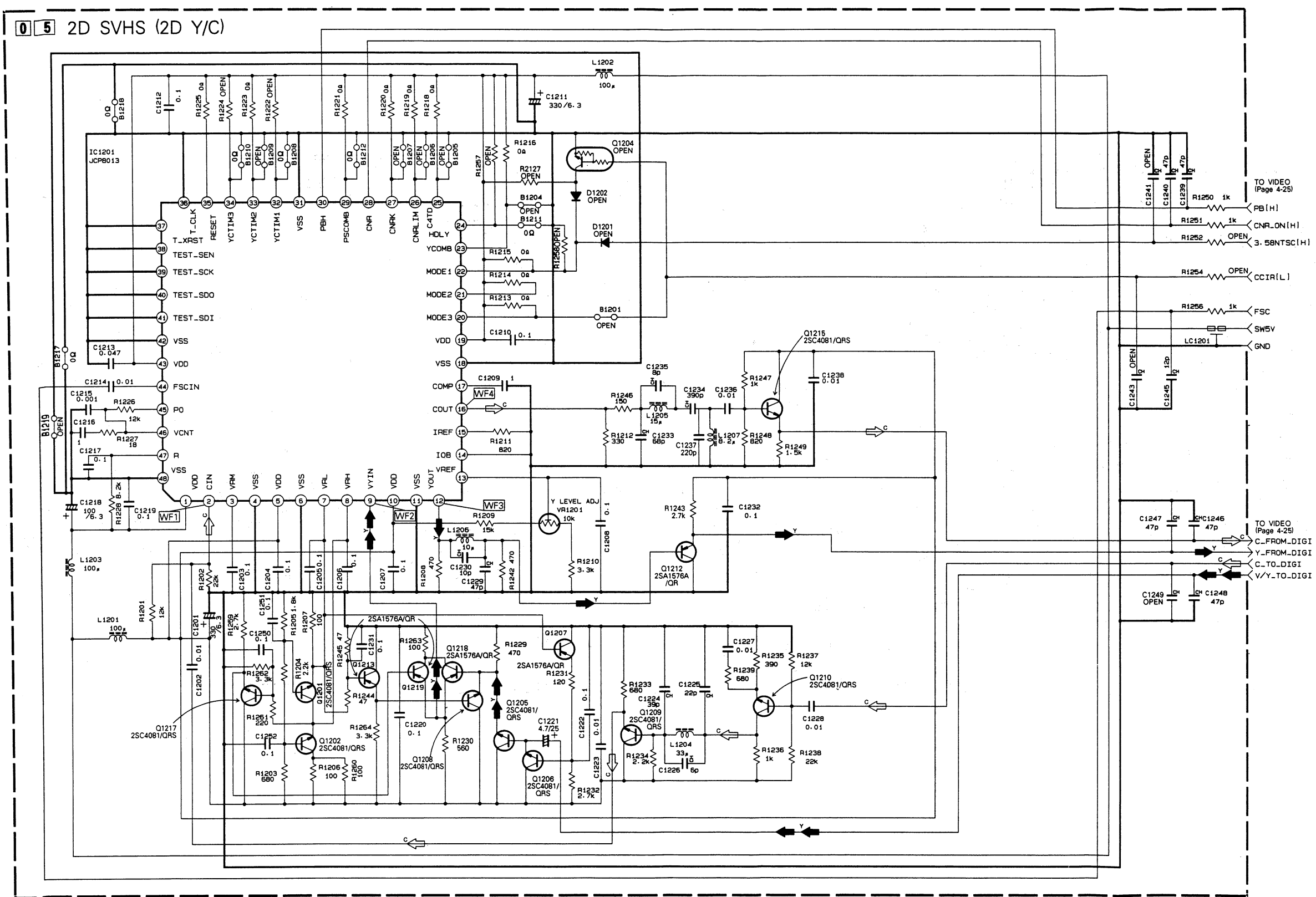
COMPONENT PARTS LOCATION GUIDE <MAIN>

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION		
CAPACITOR																	
C 1	A D 17I	C90	B C 19D	C2102	A B C 14J	C3036	A D 17O	C6024	B A C 21J	D5104	A D 4M	L2252	A D 17K				
C 2	B C 16J	C91	B C 15H	C2103	A B C 11L	C3037	A D 17P	C6031	A B C 21J	D5201	A D 11I	L3001	A D 5B				
C 3	B C 16J	C92	B C 13I	C2201	A B C 15L	C3038	A B C 8I	C6033	A B C 21I	D5202	A D 4H	L3002	A D 5C				
C 4	B C 17J	C93	B C 18G	C2202	A B C 16L	C3039	B C C 8I	C6050	A B C 22O	D5203	A D 3I	L3003	A D 7H				
C 5	B C 16J	C95	B C 13G	C2203	A B C 14L	C3040	B C C 17B	C6053	B C C 22O	D5204	A D 3I	L3004	A D 18O				
C 6	B C 17H	C96	B C 17F	C2204	A B C 15L	C3301	A D 12F	C6519	B C C 21M	D5205	A D 3I	L3005	A D 15O				
C 7	B C 17H	C97	B C 17F	C2205	A B C 15L	C3302	A D 13F	C6520	B C C 21M	D5206	A D 2H	L3301	A D 7C				
C 8	A D 17I	C98	B C C 15I	C2206	A B C 15L	C3303	A D 13G	C7201	B C C 13B	D5207	A D 2I	L3302	A D 13F				
C 9	B C 17J	C99	B C C 14I	C2207	A B C 16L	C3304	B C 7D			D5208	A D 4G	L4001	A D 11J				
C 10	B C 17I	C101	B C C 14I	C2208	A B C 16L	C3305	B C 7C	CONNECTOR									
C 11	B C 17I	C106	A B C 13O	C2209	A A D 16L	C3306	B C C 10B	CN1	A D 15K	D5210	A D 4H	L4002	A D 11H				
C 12	B C 17I	C107	A B C 17G	C2210	A B C 16L	C3307	B C C 10B	CN2	A D 22A	D5211	A D 4H	L4201	A D 11H				
C 13	B C 18H	C108	A B C 17G	C2211	B C C 16L	C3308	B C C 13G	CN3	A D 21G	D5212	A D 4H	L5201	A D 2G				
C 14	A B C 18H	C113	B B C 17D	C2212	B B C 17L	C3309	B C C 13G	CN101	A D 14O	D5301	A D 3I	L5301	A D 3D				
C 15	A B C 18H	C114	B B C 17D	C2213	A B C 17L	C4001	B C C 10I	CN102	A D 10O	D5302	A D 4F	L6050	A D 21O				
C 16	B B C 18G	C117	B B C 17F	C2214	A B C 18M	C4002	B C C 9J	CN1901	A D 22C	D5304	A D 1F	L6601	A D 20H				
C 17	B B C 18G	C119	B B C 14G	C2215	A A D 18M	C4003	B C C 11H	CN2001	A D 10J	D5305	A D 1F	L7201	A D 13B				
C 18	B B C 18G	C120	B B C 19E	C2216	A A D 18M	C4004	B C C 11I	CN2002	A D 20G	D5306	A D 2E	TRANSISTOR					
C 19	B B C 19E	C123	B B C 15F	C2217	A B C 19M	C4005	B C C 11I	CN2101	A D 11L	D5313	A D 2C	Q1	B C 19G				
C 20	B B C 19E	C128	B B C 20F	C2218	A B C 18M	C4006	B C C 10I	CN2701	A D 15M	D5314	A D 2D	Q2	B C 18E				
C 21	B B C 18F	C133	B B C 16J	C2219	A A D 19M	C4007	B C C 10H	CN3001	A D 8H	D5351	A D 3F	Q3	B C 18F				
C 22	B B C 18F	C136	B B C 17H	C2220	A B C 19M	C4008	B C C 9I	CN3003	A D 8J	D5352	A D 4F	Q4	B C 18E				
C 23	B B C 18F	C138	B B C 9P	C2221	A B C 19N	C4009	B C C 10I	CN3004	A D 10A	D5353	A D 3G	Q6	B C 16F				
C 24	B B C 18F	C139	B B C 8O	C2222	A A D 19N	C4010	B C C 8I	CN3005	A D 3A	D6001	A D 20H	Q7	B C 14F				
C 25	B B C 18F	C140	B B C 8O	C2223	A A D 18N	C4011	B C C 9I	CN3006	A D 3C	D6002	A D 21M	Q8	B C 11P				
C 26	B B C 18F	C156	B B C 10P	C2224	A A D 18N	C4012	B C C 10H	CN3008	A D 18P	IC							
C 27	B B C 18F	C157	B B C 8P	C2225	A A D 18N	C4013	B C C 9H	CN3301	A D 14H	IC1	B C 16G	Q9	B C 14O				
C 28	B B C 18G	C158	B B C 18E	C2226	A A D 17N	C4014	B C C 10G	CN4001	A D 7L	IC2	B C 19C	Q10	B C 14O				
C 29	B B C 18G	C161	B B C 16F	C2227	A A D 17N	C4015	B C C 11H	CN5001	A D 20L	IC201	B C 8M	Q11	B C 19D				
C 30	B B C 18F	C162	B B C 19B	C2228	A A D 16N	C4016	B C C 9H	CN6101	A D 1P	IC2201	B C 17M	Q12	B C 19D				
C 31	B B C 18F	C164	B B C 19F	C2229	A A D 15N	C4101	B C C 9H	CN6103	A D 22D	IC2202	B C 13L	Q13	B C 19C				
C 32	B B C 17F	C165	B B C 19G	C2230	A A D 16M	C4102	B C C 9G	CN6701	A D 22E	IC2251	B C 18K	Q14	B C 19C				
C 33	B B C 17E	C166	B B C 10N	C2231	A A D 15N	C4103	B C C 9H	CN7201	A D 20L	IC3001	B C 15D	Q15	B C 14J				
C 34	B B C 17E	C167	B B C 15I	C2232	A A D 14N	C4104	B C C 8G	CN7401	A D 6O	IC3002	A D 7I	Q16	B C 19C				
C 35	B B C 18E	C191	B B C 20B	C2233	A A D 14M	C4105	B C C 10G	CIRCUIT PROTECTOR									
C 36	B B C 18E	C201	B B C 8M	C2234	A A D 15M	C4106	B C C 11G	CP3001	A D 8H	IC3003	B C 13E	Q17	B C 13I				
C 37	A B C 20C	C202	B B C 8M	C2235	A B C 18L	C4107	B C C 10H	CP3002	A D 13F	IC3004	B C 21A	Q18	B C 14I				
C 38	A B C 18B	C203	B B C 7M	C2236	A B C 19N	C4108	B C C 9H	CP3003	A D 8H	IC3301	B C 8D	Q21	B C 12O				
C 39	B B C 18B	C204	B B C 7M	C2237	A A D 14L	C4109	B C C 11H	CP4001	A D 6L	IC3302	A D 12G	Q22	B C 17E				
C 40	B B C 16F	C205	B B C 7M	C2238	A B C 13L	C4201	B C C 11H	CP4001	A D 6L	IC4001	A D 11I	Q26	B C 10P				
C 41	B B C 15F	C206	B B C 7M	C2239	A B C 17N	C4202	B C C 11H	CP5301	A D 2F	IC4101	B C 9H	Q34	B C 17H				
C 42	B B C 15F	C207	B B C 6N	C2243	A B C 19J	C4203	B C C 11I	CP5302	A D 8G	IC4102	B C 9G	Q35	B C 17I				
C 43	B B C 15F	C208	B B C 7N	C2251	A B C 17J	C4204	B C C 11H	CP5303	A D 2F	IC4103	B C 10H	Q36	B C 17I				
C 44	B B C 15F	C209	B B C 7M	C2252	B C C 18J	C4205	B C C 11J	CP5303	A D 2D	IC5301	A D 2E	Q37	B C 17I				
C 45	B B C 15G	C210	B B C 7N	C2253	B C C 18J	C4206	B C C 11I	CR5001	A D 4N	IC7201	B C 12B	Q40	B C 20F				
C 46	B B C 15F	C211	B B C 6N	C2254	A B C 18K	C5001	B C C 20	DIODE									
C 47	B B C 15F	C212	A B C 7N	C2255	B C C 18K	C5002	A D 3N	D1	A D 11N	J1	A D 13P	Q41	B C 19F				
C 48	A B C 14F	C213	A B C 8M	C2256	B C C 18K	C5004	A D 1M	D9	A D 9N	J2	A D 12P	Q44	B C 12I				
C 49	A B C 15G	C214	A B C 8M	C2257	B C C 17K	C5005	A D 1L	D10	A D 8L	J3	A D 14P	Q45	B C 18D				
C 50	A B C 14F	C215	A B C 9M	C2258	B C C 17K	C5006	A D 3M	D11	A D 14H	J4	A D 11P	Q46	B C 18F				
C 51	A D 13G	C216	A B C 8N	C2259	B C C 18L	C5101	A D 4L	D16	A D 19I	J5	A D 9P	Q49	B C 15F				
C 52	A D 13H	C217	B B C 7M	C2260	B C C 17K	C5102	A D 2K	D20	A D 18I	J6	A D 8P	Q101	B C 12I				
C 53	A D 13G	C218	B B C 7M	C2261	B C C 17K	C5103	B C C 3L	D201	A D 6M	J3001	A D 16P	Q108	B C 20E				
C 54	A D 13H	C219	B B C 8M	C2262	B C C 17K	C5104	A D 4M	D202	A D 6L	J3002	A D 15P	Q152	B C 18G				
C 55	A D 12H	C401	A A D 16K	C3001	A D 5C	C5105	A D 3L	D207	A D 6L	J6101	A D 19P	Q153	B C 19B				
C 56	B C C 15H	C402	B B C 15K	C3002	B C C 4B	C5106	A D 4L	D208	A D 8B	J6102	A D 20P	Q201	B C 6N				
C 57	B C C 14H	C403	B B C 16K	C3003	A D 1B	C5107	A D 2K	D209	A D 14J			Q202	B C 6O				
C 58	B C C 14H	C404	B B C 16K	C3004	A D 1A	C5108	A D 3K	D2001	A D 14J			Q207	B C 7N				
C 59	B C C 15H	C405	B B C 16K	C3005	B C C 5B	C5201	A D 1F	D2101	A D 19I			Q208	B C 7N				
C 60	B C C 13H	C406	B B C 16K	C3006	B C C 5B	C5202	A D 2G	D2102	A D 11L	COIL							
C 61	B C C 15I	C407	B B C 16J	C3007	B C C 5E	C5203	A D 3F	D2201	A D 15N	L1	A D 19J	Q401	B C 14K				
C 62	B C C 14I	C408	B B C 16K	C3008	B C C 21E	C5204	A D 1G	D2202	A D 12N	L2	A D 19E	Q402	B C 15K				
C 63	A B C 13I	C409	B B C 16K	C3009	B C C 17A	C5205	A D 2F	D2203	A D 12N	L3	A D 19E	Q403	B C 16K				
C 64	B B C 15I	C2001	B B C 15J	C3010	B C C 9B	C5206	A D 3G	D2251	A D 18K	L4	A D 18C	Q404	B C 16J				
C 65	B B C 100	C2002	A B C 15J	C3011	A D 8G	C5207	A D 4G	D2252	A D 18J	L5	A D 18C	Q405	B C 13K				
C 66	B A D 10P	C2003	A B C 16I	C3012	B C C 15E	C5208	A D 1G	D2253	A D 17K	L6	A D 18B	Q2001	B C 13K				
C 67	B A D 11P	C2004	A B C 14K	C3013	B C C 16D	C5301	A D 2E	D3001	A D 13D	L7	A D 14F	Q2002	B C 13K				
C 68	B C C 12O	C2005	B B C 16I	C3014	A B C 16D	C5302	A D 3E	D3002	A D 4D	L8	A D 12H	Q2003	B C 11K				
C 69	A D 12O	C2006	B B C 16I	C3015	A B C 13E	C5303	A D 3E	D3003	A D 4D	L9	A D 13J	Q2052	B C 13K				
C 70	A D 15O	C2007	A B C 14J	C3016	B B C 14D	C5304	A D 3D	D3004	A D 5B	L10	A D 10O	Q2053	B C 13K				
C 71	B B C 11P	C2008	B B C 16I	C3017	B B C 14E	C5305	A D 3E	D3005	A D 4C	L11	A D 11O	Q2054	B C 12K				
C 72	B B C 16F	C2009	A D 14J	C3018	A B C 13E	C5306	B C C 1F	D3006	A D 5B	L12	A D 19D	Q2055	B C 12K				
C 73	B B C 18B	C2010	A B C 12J	C3019	B B C 14E	C5314	B C C 2C	D3007	A D 6E	L13	A D 19D	Q2061	B C 12J				
C 74	A B C 14O	C2013	A B C 15I	C3020	B B C 20B	C5315	A D 2D	D3008	B C C 8F	L14	A D 13H	Q2062	B C 12K				
C 75	A B C 19D	C2015	A A D 13J	C3021	B B C												

4.11 2D S-VHS(VIDEO) SCHEMATIC DIAGRAM



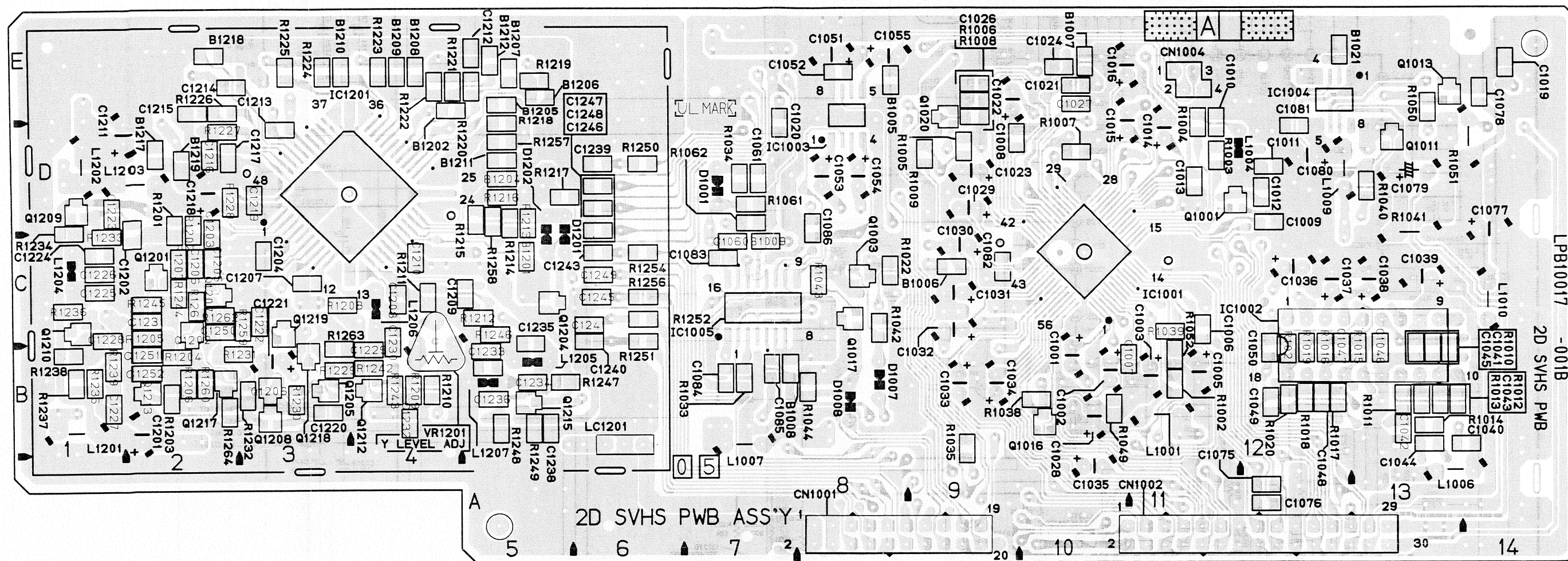
4.12 2D S-VHS(2D Y/C) SCHEMATIC DIAGRAM



NOTE : For 2D Y/C waveforms, please refer to page4-32.
But the waveform points "WF1-WF4" are the shield case inside, therefore the measurement is impossible.
In this case, please refer to the waveforms of the 2D S-VHS(VIDEO) as indicated in the following chart.

2D Y/C	VIDEO
WF1	WF16
WF2	WF5
WF3	WF6
WF4	WF8

4.13 2D S-VHS CIRCUIT BOARD

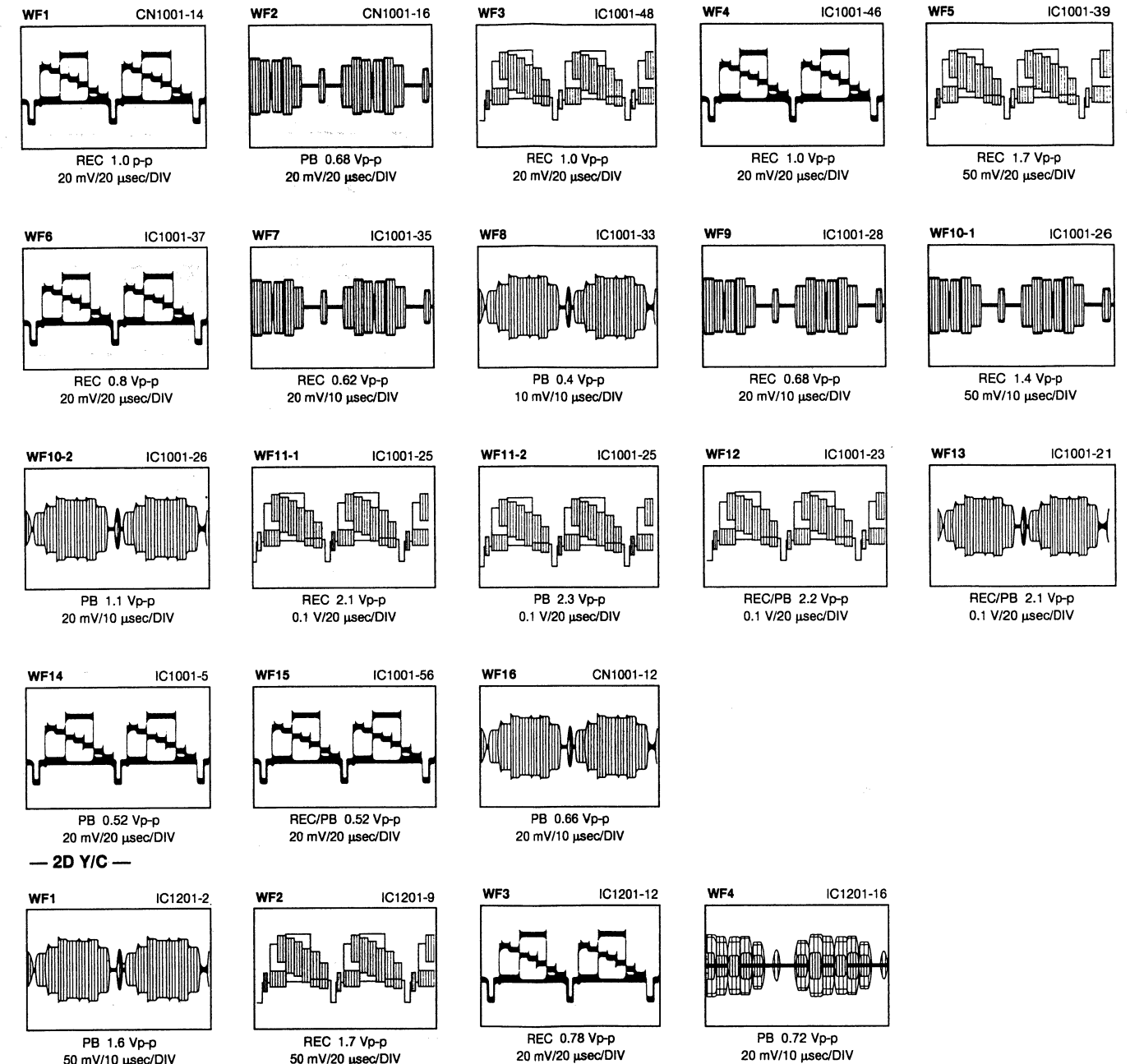


COMPONENT PARTS LOCATION GUIDE <2D S-VHS>

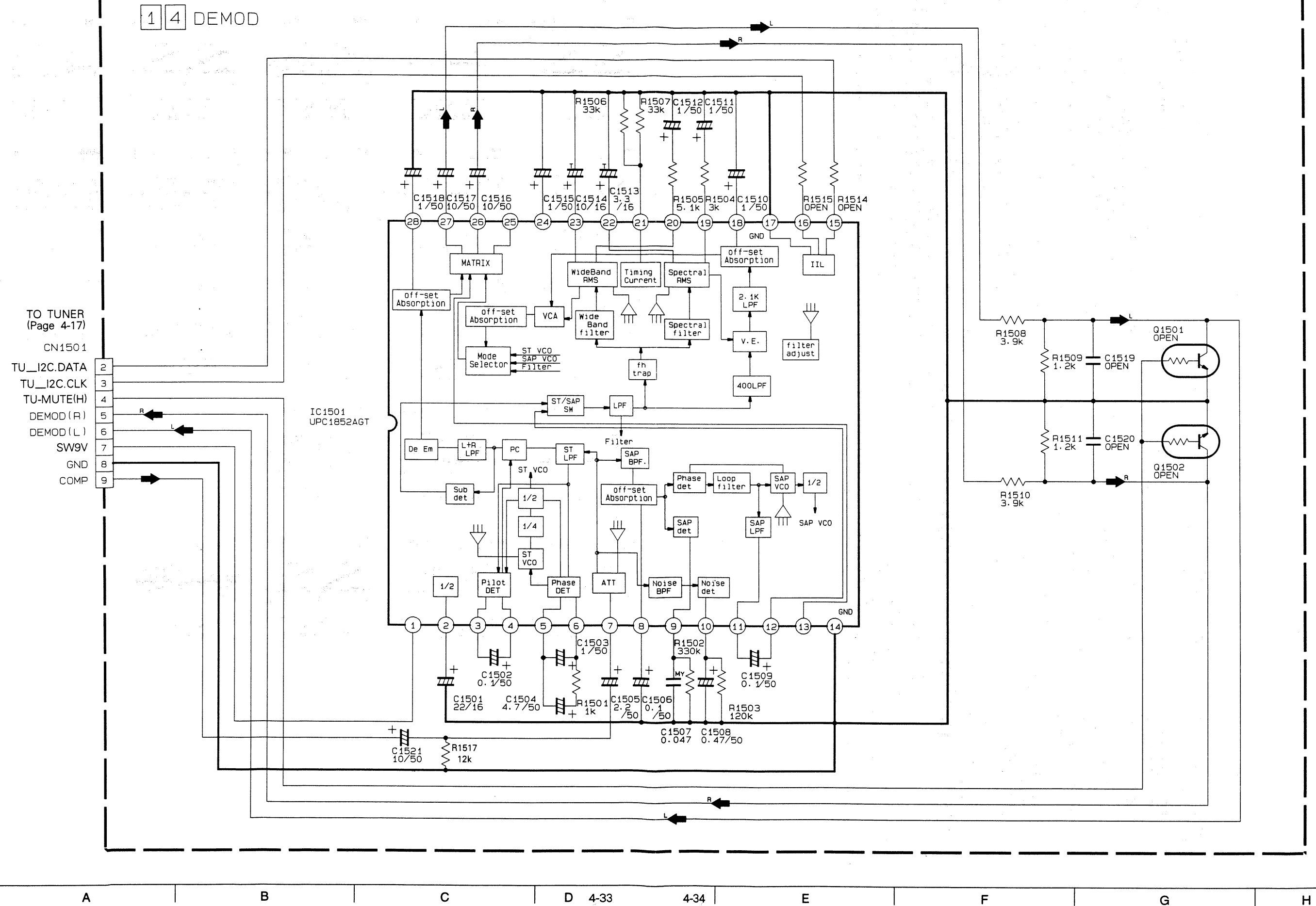
REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		C1208	B C 4C	L1203	A D 2D	R1206	B C 2B
C1001	A D 10B	C1209	B C 5C	L1204	A D 1C	R1207	B C 2C
C1002	A D 10B	C1210	B C 4C	L1205	A D 5B	R1208	B C 3C
C1003	A D 11B	C1211	A D 2D	L1206	A D 4C	R1209	B C 4B
C1005	A D 11B	C1212	B C 5E	L1207	A D 5B	R1210	B C 4B
C1006	B C 11C	C1213	B C 3D	TRANSISTOR			
C1007	B C 11B	C1214	B C 2E	Q1001	B C 11D	R1211	B C 4C
C1008	B C 9D	C1215	B C 2E	Q1003	B C 8C	R1212	B C 5C
C1009	B C 12D	C1216	B C 2D	Q1011	B C 13D	R1213	B C 5D
C1010	B C 11D	C1217	B C 2D	Q1013	B C 13E	R1214	B C 5D
C1011	B C 12D	C1218	A D 2D	Q1016	B C 10B	R1215	B C 5D
C1012	B C 12D	C1219	B C 3D	Q1017	B C 8C	R1216	B C 5D
C1013	B C 11D	C1220	B C 3B	Q1020	B C 9E	R1217	B C 5D
C1014	A D 11D	C1221	A D 3B	Q1201	B C 2C	R1218	B C 5D
C1015	A D 11D	C1222	B C 3C	Q1202	B C 2C	R1219	B C 5E
C1016	A D 11E	C1223	B C 1D	Q1204	B C 5C	R1220	B C 5E
C1019	B C 14E	C1224	B C 1C	Q1205	B C 3B	R1221	B C 4E
C1020	B C 7D	C1225	B C 1C	Q1206	B C 3B	R1222	B C 4E
C1021	B C 10E	C1226	B C 1C	Q1207	B C 2C	R1223	B C 4E
C1022	A D 9E	C1227	B C 1B	Q1208	B C 3B	R1224	B C 3E
C1023	A D 9D	C1228	B C 1C	Q1209	B C 1D	R1225	B C 3E
C1024	B C 10E	C1229	B C 4B	Q1210	B C 1C	R1226	B C 2E
C1026	B C 9E	C1230	B C 4C	Q1212	B C 4B	R1227	B C 2D
C1027	B C 10E	C1231	B C 2C	Q1213	B C 2B	R1228	B C 2D
C1028	A D 10B	C1232	B C 4B	Q1215	B C 5B	R1229	B C 3B
C1029	A D 9D	C1233	B C 5B	Q1217	B C 2B	R1230	B C 3B
C1030	A D 9C	C1234	B C 5B	Q1218	B C 3B	R1231	B C 3B
C1031	A D 9C	C1235	B C 5B	Q1219	B C 3C	R1232	B C 3B
C1032	A D 9C	C1236	B C 5B	RESISTOR			
C1033	A D 9B	C1237	B C 5B	R1002	B C 11B	R1233	B C 1C
C1034	A D 9B	C1238	B C 5B	R1003	B C 11D	R1234	B C 1D
C1035	A D 10A	C1239	B C 6D	R1004	B C 11D	R1235	B C 1B
C1036	A D 12C	C1240	B C 6C	R1005	B C 9D	R1236	B C 1C
C1037	A D 12C	C1241	B C 6C	R1006	B C 9E	R1237	B C 1B
C1038	A D 13C	C1242	B C 6C	R1007	B C 10D	R1238	B C 1B
C1039	A D 13C	C1243	B C 6C	R1008	B C 9E	R1239	B C 1B
C1040	B C 14B	C1244	B C 6D	R1009	B C 9D	R1240	B C 4B
C1041	B C 13B	C1245	B C 6D	R1010	B C 13B	R1241	B C 4B
C1042	B C 13B	C1246	B C 6D	R1011	B C 13B	R1242	B C 4B
C1043	B C 13B	C1247	B C 6D	R1012	B C 13B	R1243	B C 4B
C1044	B C 13B	C1248	B C 6C	R1013	B C 13B	R1244	B C 2C
C1045	B C 13B	C1249	B C 6C	R1014	B C 13B	R1245	B C 2C
C1046	B C 13B	C1250	B C 2C	R1015	B C 13B	R1246	B C 5C
C1047	B C 13B	C1251	B C 2B	R1016	B C 13B	R1247	B C 5B
C1048	B C 12B	C1252	B C 2B	R1017	B C 12B	R1248	B C 5B
C1049	B C 12B	CONNECTOR		R1018	B C 12B	R1249	B C 5B
C1050	B C 12B	CN1001	A D 8A	R1019	B C 12B	R1250	B C 6D
C1051	A D 8E	CN1002	A D 11A	R1020	B C 12B	R1251	B C 6C
C1052	B C 8E	CN1004	A D 11E	R1021	B C 12B	R1252	B C 6C
C1053	A D 8D	DIODE		R1022	B C 8C	R1253	B C 6C
C1054	A D 8D	D1001	A D 7D	R1023	B C 7B	R1254	B C 6C
C1055	A D 8E	D1007	A D 8B	R1033	B C 7B	R1255	B C 6C
C1060	B C 7C	D1008	A D 8B	R1034	B C 7D	R1256	B C 6C
C1061	B C 7D	D1201	A D 5C	R1035	B C 9B	R1257	B C 5D
C1075	B C 12A	D1202	A D 5C	R1038	B C 10B	R1258	B C 5D
C1076	B C 12A	IC		R1039	B C 11C	R1259	B C 3C
C1077	A D 14D	IC1001	B C 10C	R1040	B C 13D	R1260	B C 2B
C1078	B C 14E	IC1002	A D 12C	R1041	A D 13C	R1261	B C 2C
C1079	A D 13D	IC1003	B C 8E	R1042	B C 8C	R1262	B C 2C
C1080	A D 12D	IC1004	B C 12E	R1043	B C 8C	R1263	B C 3B
C1081	B C 12D	IC1005	B C 7C	R1044	B C 8B	R1264	B C 2B
C1082	B C 9C	IC1201	B C 4D	R1049	B C 10B	OTHERS	
C1083	B C 7C	COIL		R1050	B C 13E	LC1201	A D 6B
C1084	B C 7B	L1001	A D 11B	R1051	A D 14D	VR1201	A D 4C
C1085	B C 7B	L1004	A D 12D	R1052	B C 11B		
C1086	B C 8D	L1006	A D 14A	R1061	B C 7D		
C1201	A D 2B	L1007	A D 7B	R1062	B C 7D		
C1202	B C 2C	L1009	A D 12D	R1201	B C 2D		
C1203	B C 2C	L1010	A D 14C	R1202	B C 2D		
C1204	B C 3C	L1201	A D 1B	R1203	B C 2B		
C1205	B C 2C	L1202	A D 1D	R1204	B C 2B		
C1206	B C 2C			R1205	B C 2C		
C1207	B C 3C						

WAVEFORMS

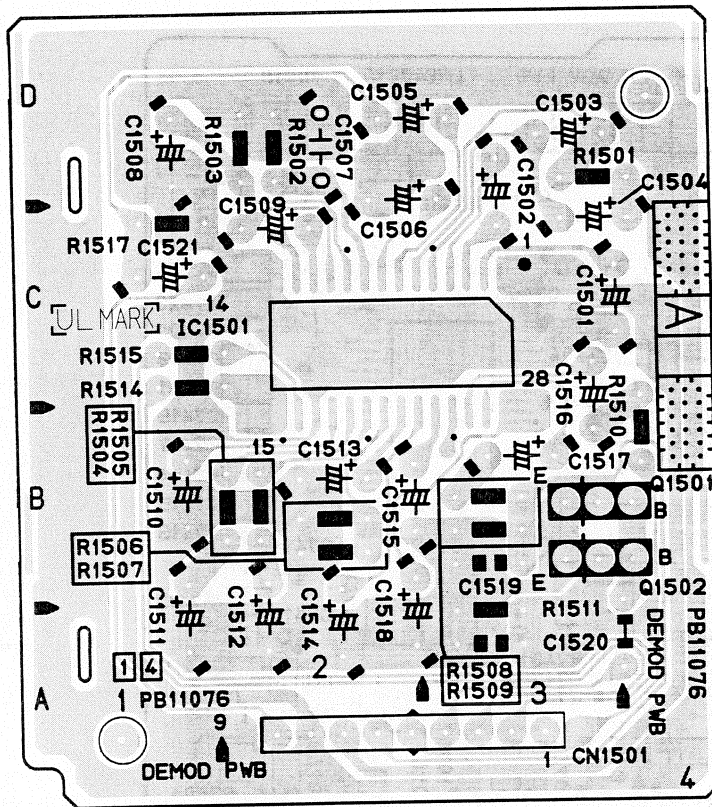
— VIDEO —



4.14 DEMODULATOR SCHEMATIC DIAGRAM



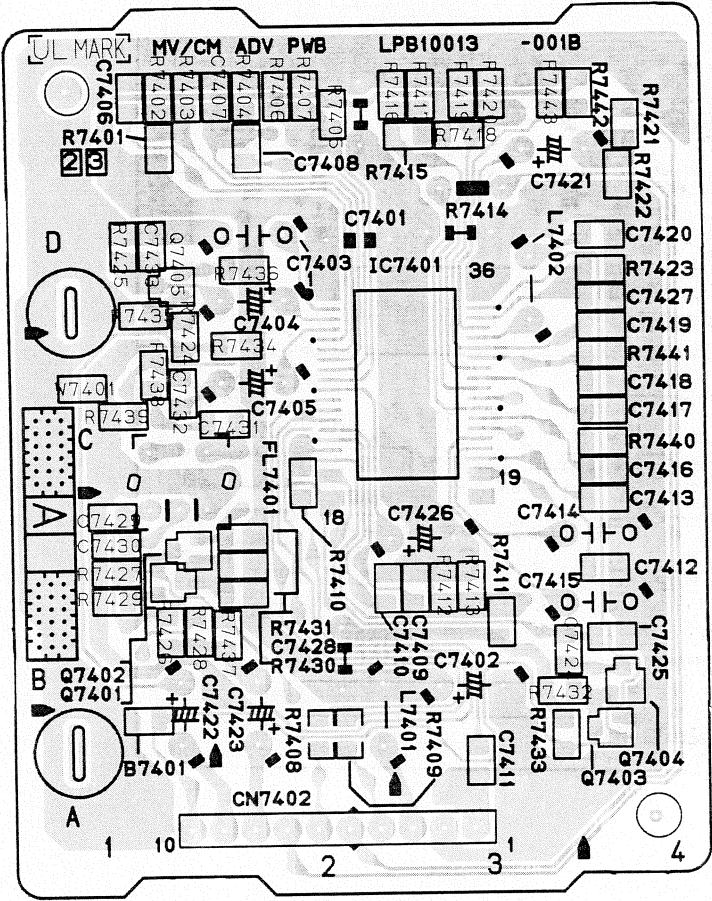
4.15 DEMODULATOR CIRCUIT BOARD



COMPONENT PARTS LOCATION GUIDE (DEMODULATOR)

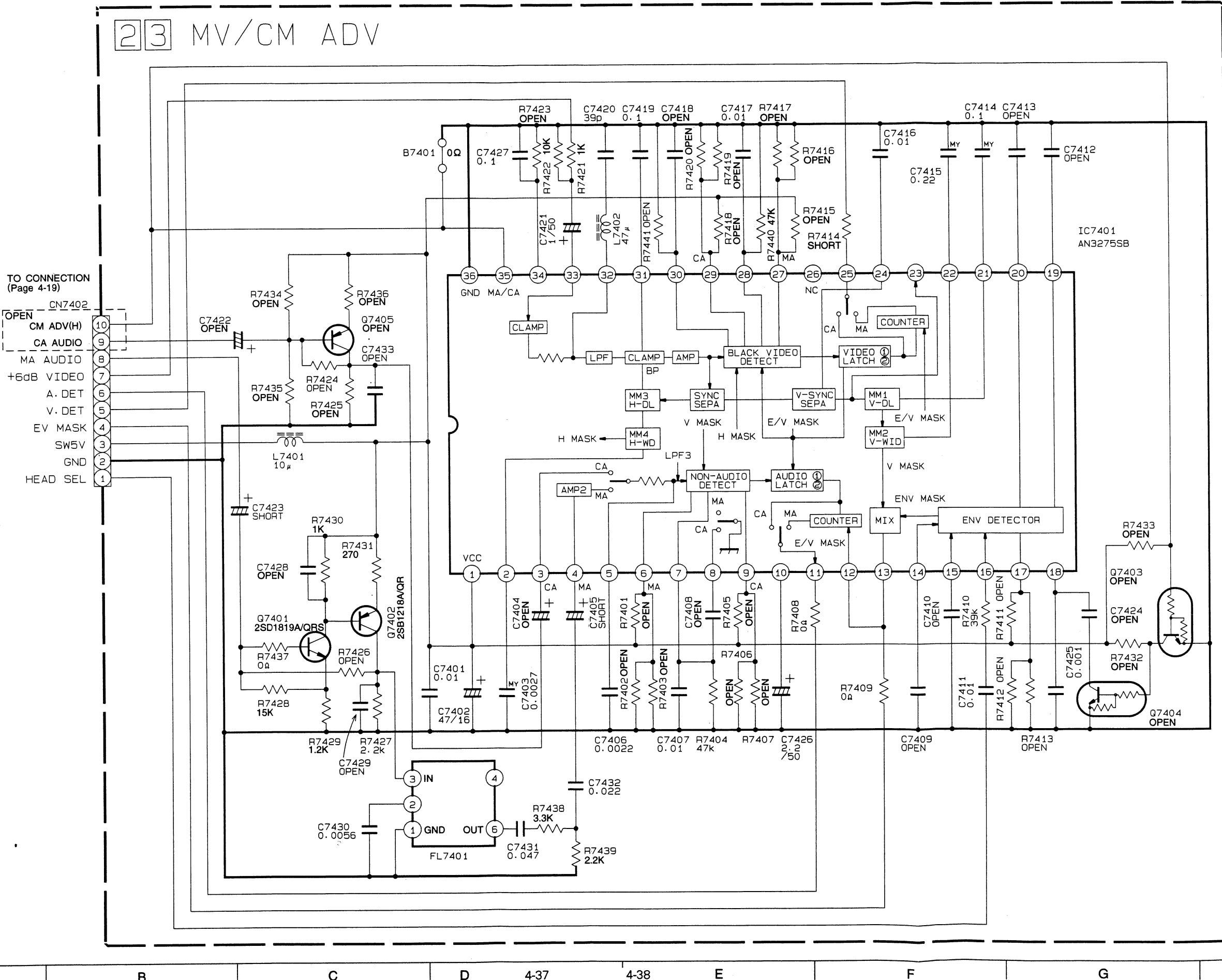
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CAPACITOR				RESISTOR									
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C1502	A	D	3D	C1519	A	D	3B		R1502	A	D	2C	
C1503	A	D	4D	C1520	A	D	3A		R1503	A	D	2C	
C1504	A	D	4C	C1521	A	D	2C		R1504	A	D	2B	
C1505	A	D	3D	CONNECTOR			R1505		A	D	2B		
C1506	A	D	3C	CN1501	A	D	3A		R1506	A	D	2B	
C1507	A	D	2C	IC			R1507		A	D	2B		
C1508	A	D	1D	IC1501	B	C	2C		R1508	A	D	3B	
C1509	A	D	2C	TRANSISTOR			R1509		A	D	3B		
C1510	A	D	1B	Q1501	A	D	3B		R1510	A	D	4B	
C1511	A	D	1A	Q1502	A	D	3B	R1511	A	D	3A		
C1512	A	D	2A					R1514	A	D	2B		
C1513	A	D	2B					R1515	A	D	2C		
C1514	A	D	2A					R1517	A	D	2C		
C1515	A	D	3B										
C1516	A	D	3C										
C1517	A	D	3B										

4.16 MOVIE/COMMERCIAL ADVANCE CIRCUIT BOARD

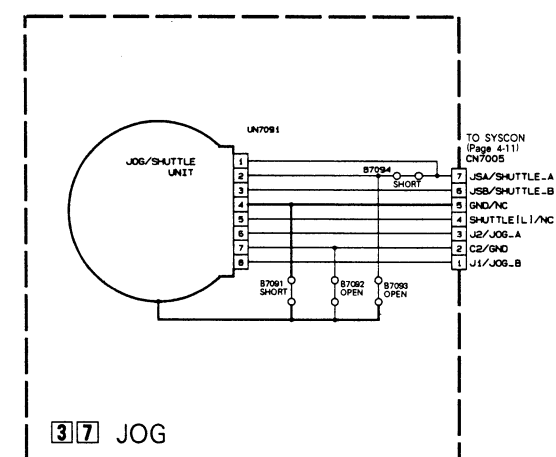
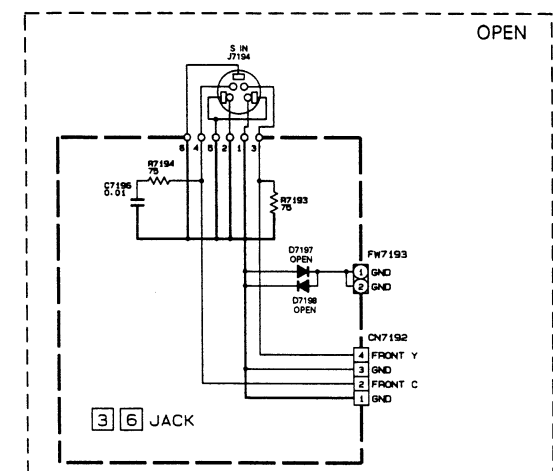
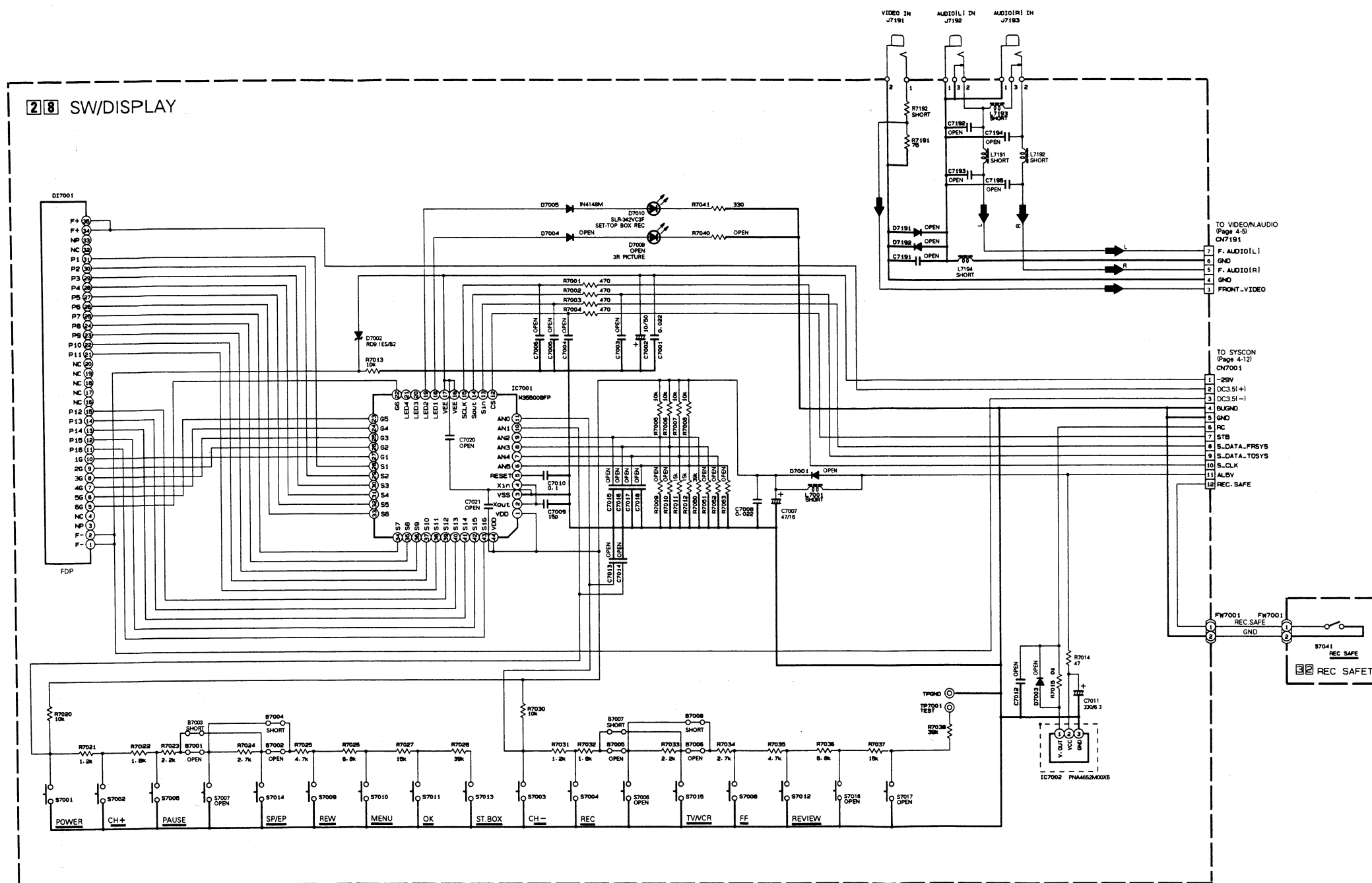


COMPONENT PARTS LOCATION GUIDE <MV/CM ADVANCE>									
REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		C7420	B C 4D	COIL		R7408	B C 2A	R7428	B C 1B
C7401	A D 2D	C7421	A D 3D	L7401	A D 2B	R7409	B C 2A	R7429	B C 1B
C7402	A D 3B	C7422	A D 1B	L7402	A D 3C	R7410	B C 2C	R7430	B C 2B
C7403	A D 2D	C7423	A D 2A	TRANSISTOR		R7411	B C 3B	R7431	B C 2B
C7404	A D 2D	C7424	B C 3B			R7412	B C 3B	R7432	B C 3A
C7405	A D 2C	C7425	B C 4B			R7413	B C 3B	R7433	B C 3A
C7406	B C 1E	C7426	A D 3B	Q7401	B C 1B	R7414	A D 3D	R7434	B C 2C
C7407	B C 2E	C7427	B C 4D	Q7402	B C 1B	R7415	B C 3D	R7435	B C 1C
C7408	B C 2D	C7428	B C 2B	Q7403	B C 4A	R7416	B C 3E	R7436	B C 2D
C7409	B C 3B	C7429	B C 1B	Q7404	B C 4B	R7417	B C 3E	R7437	B C 2B
C7410	B C 2B	C7430	B C 1B	Q7405	B C 1D	R7418	B C 3D	R7438	B C 1C
C7411	B C 3A	C7431	B C 2C	RESISTOR		R7419	B C 3E	R7439	B C 1C
C7412	B C 4B	C7432	B C 1C			R7420	B C 3E	R7440	B C 4C
C7413	B C 4B	C7433	B C 1D	R7401	B C 1D	R7421	B C 4D	R7441	B C 4C
C7414	A D 4B	CONNECTOR		R7402	B C 1E	R7422	B C 4D	R7442	B C 4E
C7415	A D 4B	CN7402	A D 3A	R7403	B C 1E	R7423	B C 4D	R7443	B C 3E
C7416	B C 4C	IC		R7404	B C 2E	R7424	B C 1C	OTHER	
C7417	B C 4C			R7405	B C 2E	R7425	B C 1D		
C7418	B C 4C			R7406	B C 2E	R7426	B C 1B		
C7419	B C 4C			R7407	B C 2E	R7427	B C 1B	FL7401	A D 2B
		IC7401	B C 3C						

4.17 MOVIE/COMMERCIAL ADVANCE SCHEMATIC DIAGRAM

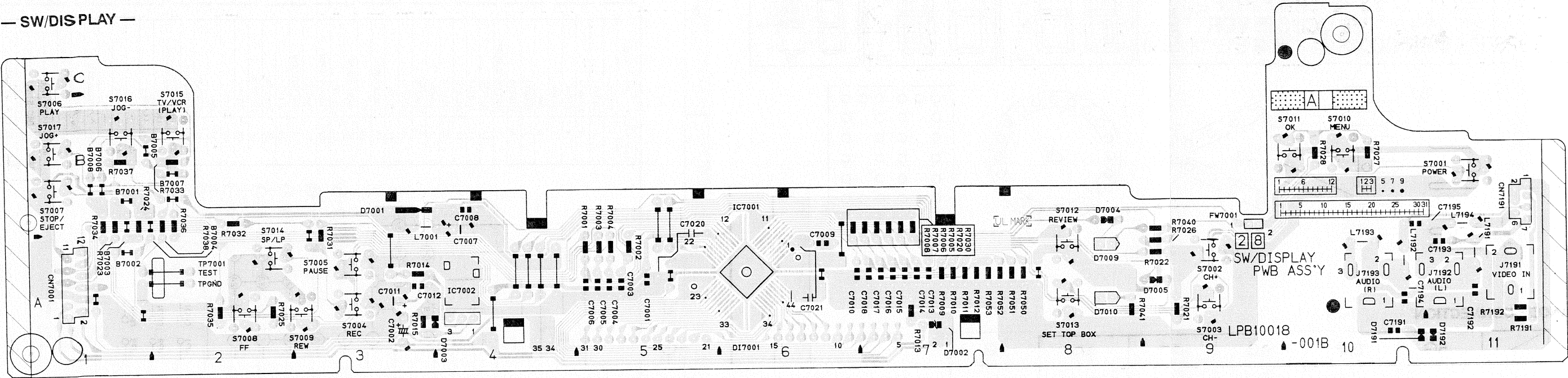


4.18 SW/DISPLAY, REC SAFETY AND JOG SCHEMATIC DIAGRAMS

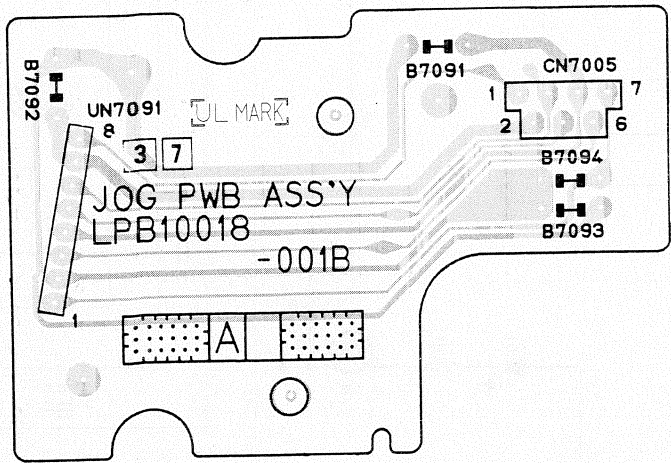


4.19 SW/DISPLAY, REC SAFETY AND JOG CIRCUIT BOARDS

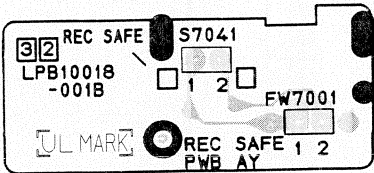
— SW/DISPLAY —



— JOG —



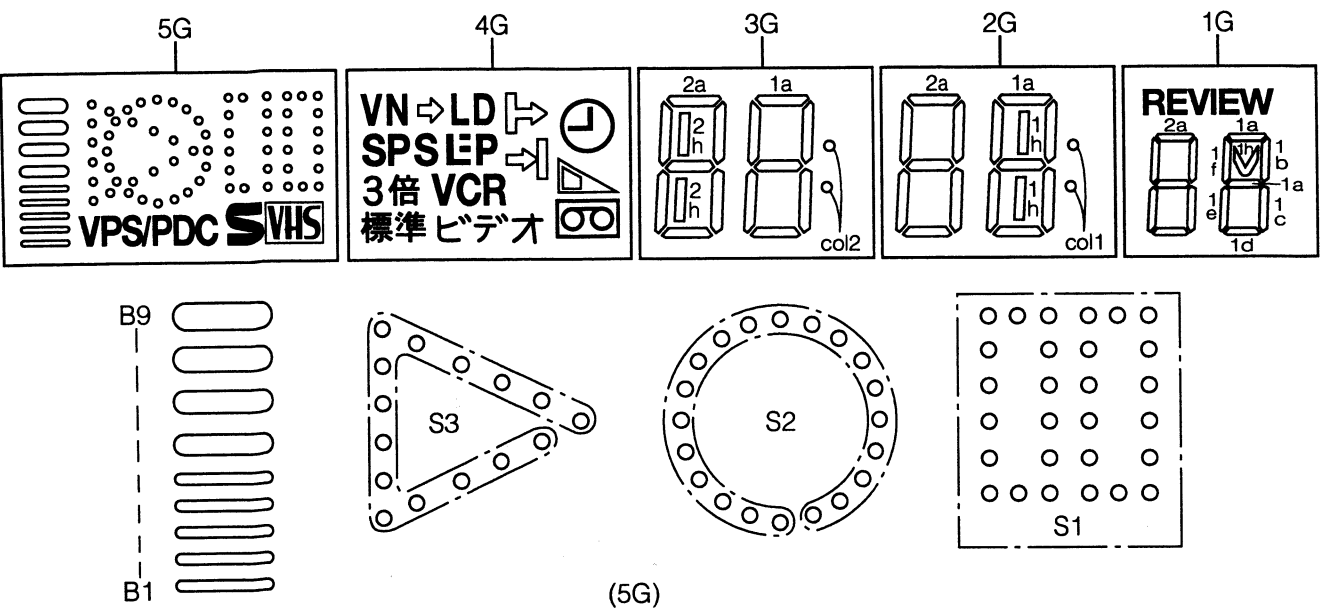
— REC SAFETY —



COMPONENT PARTS LOCATION GUIDE <SW/DISPLAY>

REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
CAPACITOR		C7192	A D 11A	JACK		R7010	A D 7A	R7038	A D 2A	S7012	A D 8A
C7001	A D 5A	C7193	A D 11A	J7191	A D 11A	R7011	A D 7A	R7040	A D 9A	S7013	A D 8A
C7002	A D 3A	C7194	A D 10A	J7192	A D 11A	R7012	A D 7A	R7041	A D 8A	S7014	A D 2A
C7003	A D 5A	C7195	A D 11A	J7193	A D 10A	R7013	A D 7A	R7050	A D 8A	S7015	A D 2B
C7004	A D 5A	CONNECTOR		COIL		R7014	A D 3A	R7051	A D 8A	S7016	A D 1B
C7005	A D 5A	CN7001	A D 1A	L7001	A D 4B	R7015	A D 3A	R7052	A D 7A	S7017	A D 1B
C7006	A D 5A	CN7191	A D 11B	L7191	A D 11A	R7020	A D 7B	R7053	A D 7A	TEST POINT	
C7007	A D 4B	DIODE		L7192	A D 10A	R7021	A D 9A	R7191	A D 11A	TP7001	A D 1A
C7008	A D 4B	D7001	A D 3B	L7193	A D 10A	R7022	A D 9A	R7192	A D 11A	TPGND	A D 1A
C7009	A D 6A	D7002	A D 7A	L7194	A D 11A	R7023	A D 1A	SWITCH		OTHERS	
C7010	A D 6A	D7003	A D 4A	RESISTOR		R7024	A D 1B	S7001	A D 11B	DI7001	A D 6A
C7011	A D 3A	D7004	A D 8B	R7001	A D 5A	R7025	A D 2A	S7002	A D 9A	FW7001	A D 9B
C7012	A D 3A	D7005	A D 9A	R7002	A D 5A	R7026	A D 9A	S7003	A D 9A		
C7013	A D 7A	D7006	A D 8A	R7003	A D 5A	R7027	A D 10B	S7004	A D 3A		
C7014	A D 7A	D7007	A D 8A	R7004	A D 5A	R7030	A D 7B	S7005	A D 3A		
C7015	A D 7A	D7008	A D 8A	R7005	A D 7A	R7031	A D 3B	S7006	A D 1C		
C7016	A D 7A	D7009	A D 10A	R7006	A D 7A	R7032	A D 2B	S7007	A D 1B		
C7017	A D 7A	D7192	A D 11A	R7007	A D 7A	R7033	A D 2B	S7008	A D 2A		
C7018	A D 7A	IC		R7008	A D 6A	R7034	A D 1B	S7009	A D 3A		
C7020	A D 5A	IC7001	B C 6A	R7009	A D 7A	R7035	A D 2A	S7010	A D 10B		
C7021	A D 6A	IC7002	A D 4A			R7036	A D 2A	S7011	A D 10B		
C7191	A D 10A					R7037	A D 1B				

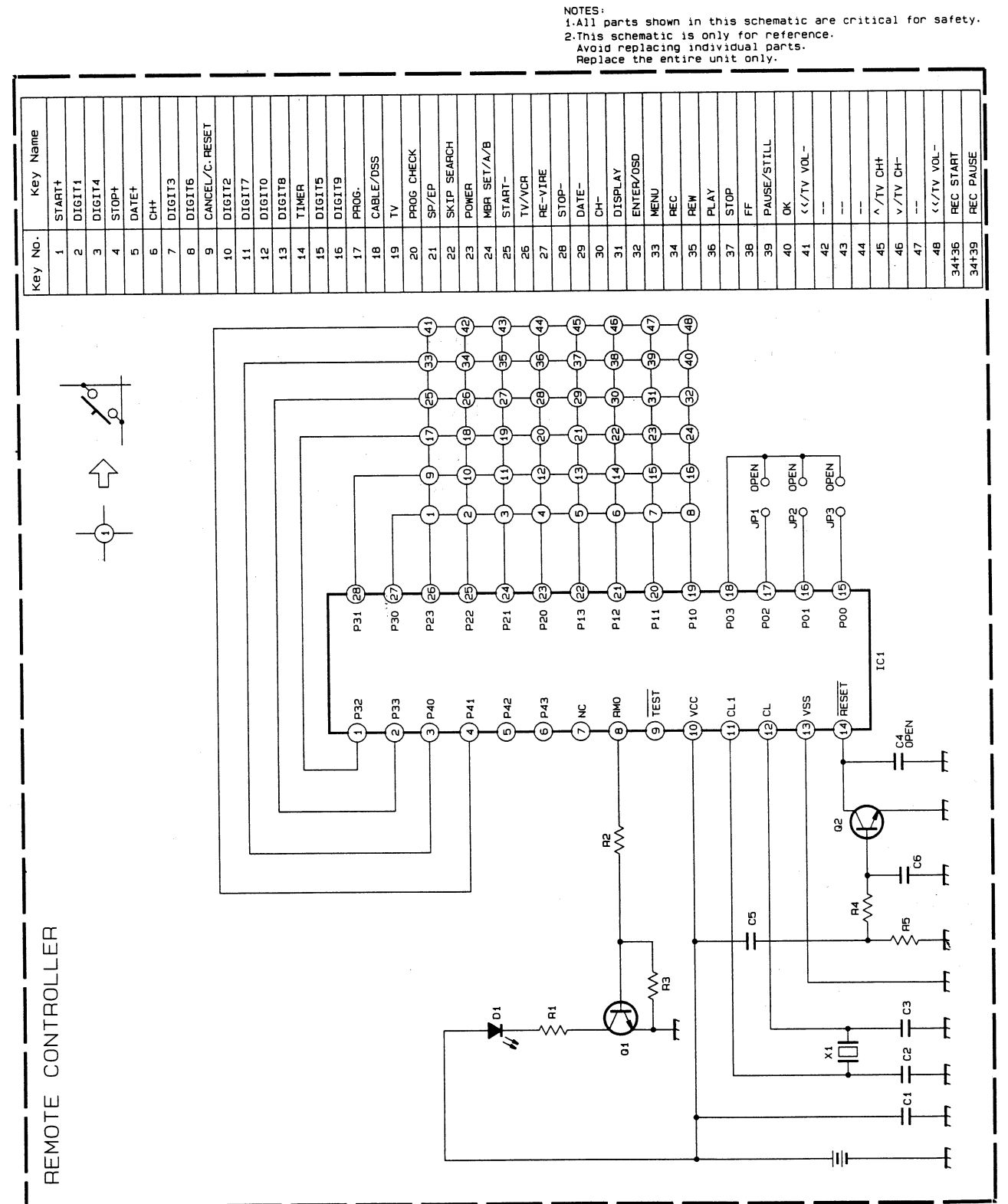
4.20 FDP GRID ASSIGNMENT AND ANODE CONNECTION
GRID ASSIGNMENT



ANODE CONNECTION

	5G	4G	3G	2G	1G
P 1	S2	→	1a	1a	1a
P 2	S1	←	1b	1b	1b
P 3	S3	3倍	1f	1f	1f
P 4	VPS/PDC	標準	1g	1g	1g
P 5	SVHS	⌚	1c	1c	1c
P 6	—	△	1e	1e	1e
P 7	—	⊞	1d	1d	1d
P 8	B9	VCR	col2	1h	1h
P 9	B8	ビデオ	2a	2a	2a
P10	B7	⇒	2b	2b	2b
P11	B6	VN	2f	2f	2f
P12	B5	LD	2g	2g	2g
P13	B4	SP	2c	2c	2c
P14	B3	S _(SEP)	2e	2e	2e
P15	B2	= _(SEP)	2d	2d	2d
P16	B1	LP _(SEP)	2h	col1	REVIEW

4.21 REMOTE CONTROL SCHEMATIC DIAGRAM



4.22 VOLTAGE CHARTS

<VIDEO/N.AUDIO>

MODE PIN NO.	REC	PLAY
IC1		
1	2.5	2.5
2	2.5	2.5
3	0	0
4	2.3	2.3
5	0	0
6	1.5	0.9
7	-	-
8	-	-
9	2.5	2.5
10	2.4	2.4
11	2.4	2.4
12	5.1	5.1
13	1.9	1.5
14	1.9	1.3
15	2.6	3.1
16	1.5	0.6
17	1.8	1.8
18	2.3	2.1
19	3.0	3.0
20	2.8	2.5
21	2.3	2.3
22	2.3	2.1
23	3.0	3.0
24	2.1	2.1
25	1.4	1.4
26	2.1	2.1
27	0	0
28	5.1	5.1
29	1.2	1.9
30	3.1	3.1
31	2.8	2.8
32	0	0
33	0	0
34	0	0
35	3.2	3.2
36	5.1	5.1
37	5.0	5.0
38	5.1	5.1
39	3.2	3.2
40	5.1	5.1
41	5.1	5.1
42	2.1	2.1
43	5.1	5.1
44	2.6	2.6
45	0	0
46	2.2	2.2
47	0	0
48	0	0
49	0	0
50	0.4	0.4
51	0.6	0.6
52	1.4	2.3
53	3.0	2.8
54	2.0	1.9
55	2.1	2.1
56	2.2	2.8
57	5.1	5.1
58	3.2	3.2
59	3.4	3.4
60	2.1	2.1
61	5.1	5.1
62	4.6	4.6
63	4.5	4.4
64	0	0

MODE PIN NO.	REC	PLAY
65	2.1	2.4
66	5.1	5.1
67	5.1	5.1
68	0	0
69	2.8	2.8
70	2.8	2.8
71	-	-
72	2.3	2.2
73	-	-
74	2.7	1.1
75	0.3	0
76	2.7	2.6
77	0	0
78	2.8	2.8
79	4.1	2.3
80	0	0
81	2.6	2.6
82	1.2	1.2
83	2.6	2.6
84	0	1.5
85	0	0
86	2.5	2.3
87	2.1	2.3
88	2.1	2.3
89	2.5	2.3
90	5.0	5.1
91	0	0
92	0	0
93	0	0
94	0	0
95	2.8	2.8
96	5.1	5.1
97	0	0
98	5.1	5.1
99	0.6	2.7
100	2.5	2.5
IC2		
1	2.8	2.8
2	0	0
3	2.8	2.8
4	5.0	0
5	2.8	2.8
6	5.1	5.1
7	2.1	2.1
8	0	0
Q6		
E	2.7	2.7
C	0	0
B	2.1	2.1
Q9		
E	3.7	3.7
C	0	0
B	3.0	3.0
Q13		
E	3.0	2.3
C	3.0	2.9
B	3.7	2.9
Q14		
E	2.4	2.3
C	5.1	5.1
B	3.0	2.9
Q15		
E	3.0	2.9
C	0	0
B	2.4	2.3

MODE PIN NO.	REC	PLAY
Q16		
E	5.1	5.1
C	5.0	0
B	0	4.9
Q17		
E	0	0
C	0	0
B	3.1	3.1
Q18		
E	0	0
C	0	0
B	3.1	3.1
Q19		
E	0	0
C	1.9	1.9
B	0	4.9
Q21		
E	0	0
C	0	0
B	4.4	4.4
Q44		
E	5.1	5.1
C	5.1	5.1
B	0	0
Q45		
E	2.6	2.6
C	5.1	5.1
B	3.2	3.2
Q49		
E	2.1	2.1
C	5.1	5.1
B	2.8	2.8
Q101		
E	0	0
C	0	0
B	5.1	5.1
Q152		
E	3.7	2.9
C	0	0
B	4.1	2.3
Q2001		
E	-17.7	0
C	0.5	0
B	-16.5	0.7
Q2002		
E	-11.2	0
C	0	0
B	-17.3	0.7
Q2003		
E	5.1	5.1
C	-17.5	5.0
B	4.9	0
Q2051		
E	0	0
C	8.3	0.3
B	0.6	0.3
Q2052		
E	11.4	11.4
C	11.1	2.5
B	10.6	11.3
Q2053		
E	0	0
C	0	11.2
B	4.9	0
Q2054		

MODE PIN NO.	REC	PLAY
E	11.2	2.5
C	11.0	0.3
B	10.4	2.5
Q2055		
E	0	0
C	0	2.8
B	4.8	0
Q2103		
E	1.8	1.8
C	5.0	5.0
B	2.4	2.4
CN1		
1	0	0
2	0	0
3	0	0
4	0	0
5	2.1	2.2
6	2.1	2.2
7	2.1	2.2
8	2.1	2.2
9	4.2	0
10	4.1	0
11	4.2	0
CN2		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
CN101		
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
6	-	-
7	-	-
8	-	-
9	-	-
10	-	-
11	0	0
12	0	0
13	5.1	5.1
14	5.1	5.1
15	5.0	5.0
16	-	-
17	-	-
18	0	0
19	2.6	2.6
20	-	-
21	0.5	0.5
22	2.7	2.7
23	-	-
24	0	0
25	-	-
26	0	0
27	0	0
28	-	-
29	7.9	0.4
30	0	0
CN102		
1	0	0
2	0	0
3	0.3	0.3
4	0	0

MODE PIN NO.	REC	PLAY
5	0	0
6	0	0
7	2.6	2.5
8	2.3	2.1
9	1.4	2.3
10	4.9	4.9
11	2.5	2.5
12	3.1	3.1
13	0	0
14	0	0
15	2.3	2.1
16	0	0
17	4.6	4.5
18	4.5	4.4
19	5.1	5.1
20	5.1	5.1
21	2.4	2.4
22	0	0
23	3.0	3.0
24	0	0
25	0	0
26	2.9	2.9
27	11.4	11.4
28	2.2	2.2
29	0.3	0.3
30	2.8	2.8
CN2001		
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	1.7	2.5
7	2.0	2.5
CN2002		
1	0	0
2	0	0

<ON SCREEN>

MODE PIN NO.	REC	PLAY
IC201		
1	0	0
2	2.7	2.7
3	4.9	4.9
4	0	0
5	0	0
6	2.5	2.5
7	2.5	2.5
8	5.1	5.1
9	-	-
10	4.6	4.6
11	1.6	1.6
12	5.1	5.1
13	2.4	2.4
14	0	0
15	2.4	2.4
16	5.0	5.0
17	2.9	2.9
18	3.6	3.6
19	-	-

MODE PIN NO.	REC	PLAY
20	5.1	5.1
21	5.0	5.0
22	-	-
23	5.1	5.1
24	5.1	5.1
Q201		
E	0.7	0.7
C	0	0
B	0	0
Q202		
E	0	0
C	5.0	5.0
B	0.7	0.7
Q207		
E	-	-
C	-	-
B	4.5	4.6
Q208		
E	2.9	3.0
C	0	0
B	2.4	2.3

<FMA>

MODE PIN NO.	REC	PLAY
IC2201		
1	2.4	2.4
2	0	0
3	2.5	2.5
4	0	0
5	0	0
6	2.5	2.5
7	0	0
8	2.7	2.5
9	1.5	1.5
10	0	0
11	2.5	2.5
12	2.5	2.5
13	2.5	2.4
14	2.0	2.1
15	2.6	0
16	4.6	4.6
17	4.5	4.4
18	0	2.6
19	0	0
20	0	2.0
21	2.0	1.9
22	-	-
23	0	0
24	2.0	2.1
25	2.5	2.3
26	2.5	2.5
27	2.5	2.5
28	0	0
29	1.7	1.7
30	2.7	2.5
31	5.1	5.1
32	0	0
33	2.5	2.5
34	0	0

MODE PIN NO.	REC	PLAY
35	0	0
36	2.3	0
37	2.4	2.5
38	2.6	2.5
39	9.5	9.5
40	0	0.6
41	4.4	4.4
42	0	0
43	0	0
44	0	0
45	4.4	4.4
46	4.4	4.4
47	1.7	1.7
48	1.7	1.7
IC2251		
1	0	2.6
2	4.2	0
3	0.5	0.6
4	0	0
5	0.5	0.6
6	4.2	0
7	4.1	0
8	2.5	2.6
9	0.6	0
10	5.0	5.0
11	3.0	4.0
12	0	0
13	1.8	1.0
14	1.9	2.1
15	0.7	0
16	4.4	0.9
Q2251		
E	4.4	0
C	4.5	0.9
B	0.5	0.4
Q2253		
E	0	0
C	0.5	1.0
B	0	0
Q2256		
E	0	0
C	0.3	0.3
B	0	0
Q2257		
E	0	0
C	0	0
B	4.4	4.4

<SYSCON>

MODE PIN NO.	REC	PLAY
IC3001		
1	0	0
2	0	0
3	0	0
4	5.0	5.1
5	0	0
6	0	0
7	-	-
8	-	-

MODE PIN NO.	REC	PLAY
9	0	0
10	-	-
11	-	-
12	5.0	5.0
13	0	0
14	0	0
15	4.9	4.9
16	4.9	4.9
17	5.1	0
18	0	0
19	0	0
20	0	4.6
21	0	0
22	3.2	0
23	1.3	1.3
24	0	0
25	0	0
26	0	1.1
27	0	0
28	0.8	0.8
29	2.2	0.3
30	4.2	0.3
31	0.4	0.3
32	0.4	0.3
33	0.8	0.8
34	0	0.3
35	0.4	0.3
36	0.3	0.3
37	0	0.3
38	0.3	0.3
39	4.9	0
40	5.0	0
41	4.9	4.9
42	5.0	5.0
43	0	0
44	4.9	4.9
45	4.0	4.0
46	0.3	0
47	0	0
48	0	0
49	0	0
50	4.8	4.8
51	0.6	0.6
52	0	0
53	0	0
54	5.1	5.1
55	0	0
56	-	-
57	1.0	1.0
58	-	5.0
59	4.6	4.6
60	-	-
61	4.4	4.6
62	4.9	5.0
63	5.0	5.0
64	4.9	5.0
65	4.0	4.1
66	0	0
67	3.2	0
68	0	0
69	5.0	5.0
70	5.0	5.0
71	2.5	2.5
72	5.0	5.0
73	5.0	5.0

MODE PIN NO.	REC	PLAY
B	0	0
Q3007		
E	5.2	5.2
C	0	0
B	5.2	5.2
CN3001		
1	0	0
2	2.6	2.6
3	2.5	2.5
4	5.0	5.1
5	0	0
6	5.0	5.0
7	-	-
8	12.2	12.2
CN3003		
1	0.3	0.3
2	0.3	0.3
CN3004		
1	5.0	5.0
2	4.9	5.0
3	0	0
4	0	0
CN3005		
1	5.0	5.0
2	5.0	5.0
3	4.6	4.6
4	-	-
5	1.3	1.1
6	4.4	4.5
7	4.8	4.9
8	0	0
9	0	0
10	-20.5	-20.4
11	-16.7	-16.5
12	-29.3	-29.2
CN3006		
1	5.2	5.2
2	5.2	5.2
3	0	0
4	5.2	5.2
5	5.0	5.0
6	5.2	5.2
7	5.0	5.0

MODE PIN NO.	REC	PLAY
13	1.7	2.5
14	2.8	2.5
15	2.5	2.6
16	0	0
17	2.4	2.4
18	0	0
19	0.4	0.5
20	0	2.6
21	2.5	2.5
22	1.6	1.7
23	5.0	5.1
24	-	-
CN4001		
1	12.2	12.2
2	0	0
3	1.5	1.5
4	1.6	1.6

MODE PIN NO.	REC	PLAY
IC5301		
1	5.8	5.8
2	5.1	5.1
3	4.7	4.7
4	0	0
5	12.1	12.0
6	11.4	11.4
7	12.2	12.2
8	12.1	12.2
9	1.3	1.3
10	10.9	10.9

MODE PIN NO.	REC	PLAY
Q5101		
S	0	0
D	100.6	99.7
G	0	0
Q5102		
E	0	0
C	0.6	0.7
B	0.4	0.5
Q5317		
E	5.1	5.1
C	5.8	5.8
B	5.8	5.8
Q5318		
E	0	0
C	5.7	5.8
B	0.6	0.6
Q5451		
E	-	-
C	-	-
B	-	-
Q5452		
E	-	-
C	-	-
B	-	-

<TUNER>

MODE PIN NO.	REC	PLAY
Q6001		
E	9.0	9.0
C	11.3	11.3
B	9.6	9.6
Q6031		
E	0	0
C	0	0
B	4.0	4.1
CN6701		
1	-	-
2	-	-
3	-	-
4	4.2	4.2
5	0	0
6	0	0
7	9.0	9.0
8	0	0
9	1.7	1.7

<CONNECTION>

MODE PIN NO.	REC	PLAY
CN7401		
1	0	0
2	0	0
3	5.0	5.0
4	1.3	1.3
5	4.9	4.9
6	4.9	4.9
7	2.3	2.4
8	1.8	1.8
9	-	-
10	-	-

<2D S-VHS(VIDEO,2D Y/C)>

MODE PIN NO.	REC	PLAY
IC1001		
1	3.0	3.0
2	0	5.0
3	2.4	2.4
4	1.9	1.9
5	2.9	3.0
6	2.8	2.8
7	-	-
8	3.1	3.1
9	-	-
10	2.8	2.8
11	2.8	2.8
12	2.3	2.4
13	4.5	4.4
14	4.7	4.6
15	-	-
16	2.8	2.8
17	4.2	4.2
18	3.1	2.1

MODE PIN NO.	REC	PLAY
19	0.5	0.7
20	0	0
21	2.3	2.3
22	2.7	2.8
23	2.4	2.4
24	0	0
25	3.5	3.4
26	2.1	2.1
27	2.7	2.7
28	2.9	2.9
29	-	-
30	0	0
31	2.9	2.9
32	0	0
33	2.8	2.8
34	5.0	5.0
35	2.8	2.8
36	1.9	1.9
37	3.2	3.2
38	2.9	2.9
39	2.4	2.4
40	2.7	2.7
41	-	-
42	2.9	2.9
43	-	-
44	2.3	2.2
45	0	0
46	2.8	2.8
47	1.9	1.2
48	2.8	2.8
49	5.0	5.0
50	2.8	2.8
51	5.0	5.0
52	2.8	2.9
53	2.4	2.1
54	2.7	3.6
55	0	0
56	2.5	2.4
IC1002		
1	2.0	2.0
2	0	5.0
3	3.4	3.4
4	3.5	3.5
5	5.0	5.1
6	2.2	2.3
7	-	-
8	5.0	5.0
9	-	-
10	2.9	2.8
11	2.9	2.8
12	2.9	2.9
13	0	2.9
14	2.8	0
15	2.8	2.9
16	2.0	2.0
17	2.0	2.0
18	2.0	2.0
IC1201		
1	5.0	5.1
2	2.4	2.4
3	2.2	2.2
4	0	0
5	4.8	4.8
6	0	0
7	1.1	1.1

MODE PIN NO.	REC	PLAY
8	3.3	3.3
9	2.1	2.1
10	4.8	4.8
11	0	0
12	0.5	0.5
13	0.9	0.9
14	0	0
15	0.9	0.9
16	0.7	0.7
17	3.4	3.4
18	0	0
19	4.9	4.9
20	4.9	4.9
21	4.9	4.9
22	4.9	5.0
23	5.0	4.9
24	0	0
25	4.9	4.9
26	4.9	4.9
27	4.9	5.0
28	5.0	5.0
29	0	0
30	0	5.0
31	0	0
32	0	0
33	4.9	5.0
34	0	0
35	4.9	4.9
36	0	0
37	0	0
38	0	0
39	0	0
40	0	0
41	0	0
42	0	0
43	4.9	4.9
44	2.4	2.4
45	1.6	1.6
46	1.6	1.6
47	2.3	2.3
48	0	0
Q1003		
E	0	0
C	0	0
B	4.2	4.2
Q1011		
E	3.0	3.0
C	0	0
B	2.3	2.3
Q1013		
E	2.7	2.8
C	0	0
B	2.2	2.2
Q1016		
E	0	0
C	0	0
B	4.9	4.9
Q1201		
E	1.1	1.1
C	3.3	3.2
B	1.8	1.8
Q1202		
E	3.3	3.3
C	3.6	3.6
B	4.1	4.0

MODE PIN NO.	REC	PLAY
Q1205		
E	1.5	1.5
C	4.8	4.9
B	2.1	2.1
Q1206		
E	2.1	2.1
C	4.8	4.8
B	1.9	1.9
Q1207		
E	1.7	1.8
C	0	0
B	1.2	1.1
Q1208		
E	1.5	1.5
C	4.8	4.8
B	1.2	1.2
Q1209		
E	2.4	2.4
C	4.9	4.8
B	3.0	3.0
Q1210		
E	1.0	1.0
C	3.1	3.1
B	1.7	1.6
Q1212		
E	1.1	1.1
C	0	0
B	0.5	0.5
Q1213		
E	1.2	1.2
C	0	0
B	0.6	0.6
Q1215		
E	1.5	1.5
C	4.8	4.8
B	2.2	2.2
Q1217		
E	2.5	2.5
C	4.8	4.8
B	3.1	3.1
Q1218		
E	2.1	2.1
C	0.5	0.5
B	1.4	1.5
Q1219		
E	2.1	2.1
C	0.5	0.5
B	2.5	2.5
CN1001		
1	0	0
2	0	0
3	5.1	5.1
4	5.1	5.1
5	5.0	5.0
6	-	-
7	-	-
8	0	0
9	2.6	2.6
10	-	-
11	0.5	0.5
12	2.7	2.7
13	-	-
14	0	0
15	-	-
16	0	0

MODE PIN NO.	REC	PLAY
17	0	0
18	-	-
19	7.9	0.4
20	0	0
CN1002		
1	0	0
2	0	0
3	0.3	0.3
4	0	0
5	0	0
6	0	0
7	2.6	2.5
8	2.3	2.1
9	1.4	2.3
10	4.9	4.9
11	2.5	2.5
12	3.1	3.1
13	0	0
14	0	0
15	2.3	2.1
16	0	0
17	4.6	4.5
18	4.5	4.4
19	5.1	5.1
20	5.1	5.1
21	2.4	2.4
22	0	0
23	3.0	3.0
24	0	0
25	0	0
26	2.9	2.9
27	11.4	11.4
28	2.2	2.2
29	0.3	0.3
30	2.8	2.8

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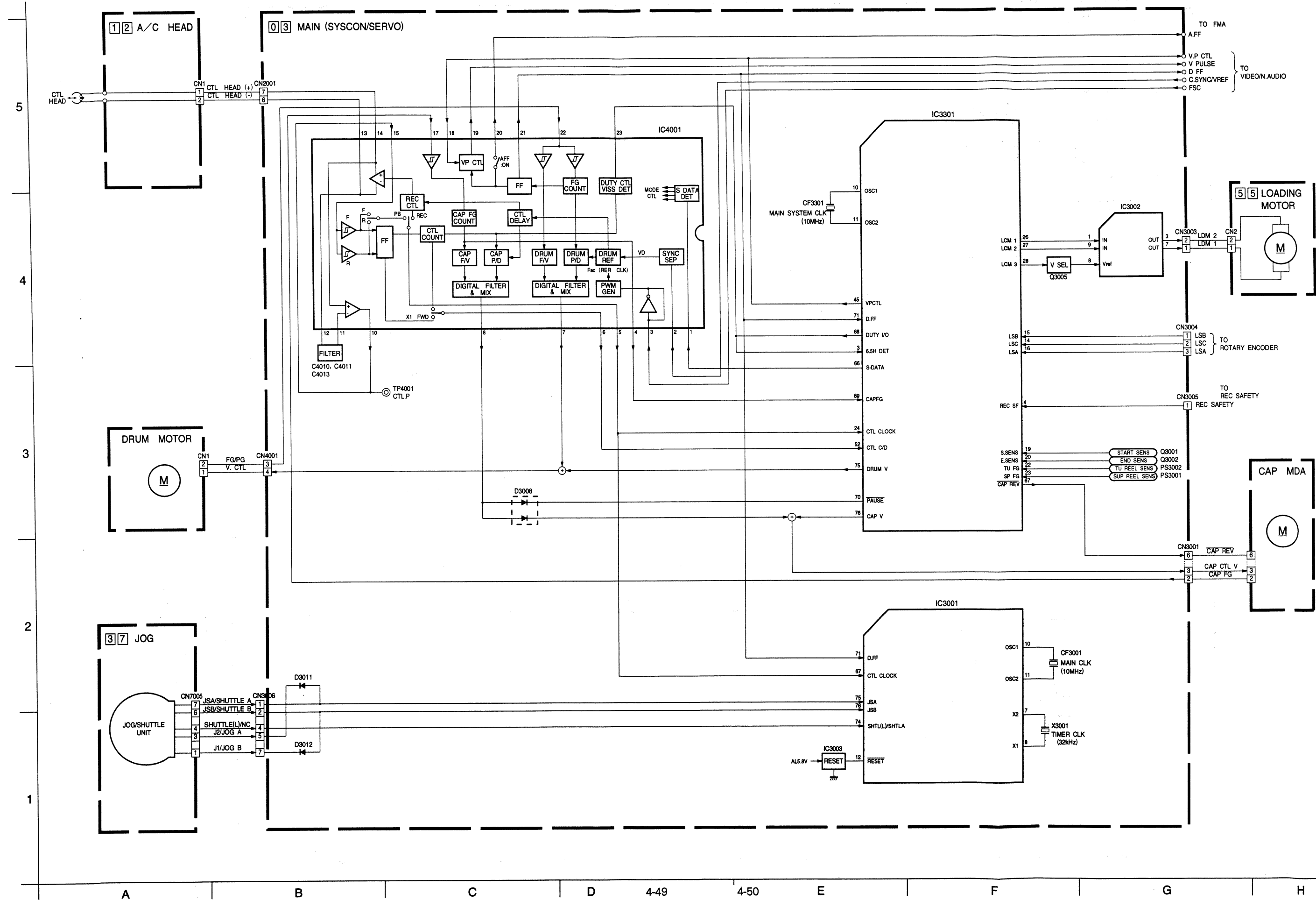
MODE PIN NO.	REC	PLAY
IC1501		
1	9.0	9.0
2	4.5	4.5
3	4.5	4.5
4	4.5	4.5
5	4.5	4.5
6	4.5	4.5
7	4.4	4.4
8	4.3	4.3
9	5.5	5.5
10	1.8	1.8
11	3.1	3.2
12	4.4	4.5
13	-	-
14	0	0
15	-	-
16	-	-
17	0	0
18	4.5	4.5
19	4.6	4.6

MODE PIN NO.	REC	PLAY
20	4.6	4.6
21	1.2	1.2
22	5.2	5.2
23	5.2	5.2
24	4.4	4.4
25	-	-
26	4.5	4.5
27	4.5	4.5
28	3.6	3.6
CN1501		
1	-	-
2	-	-
3	-	-
4	4.2	4.2
5	0	0
6	0	0
7	9.0	9.0
8	0	0
9	1.7	1.7

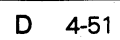
<MV/CM ADV>

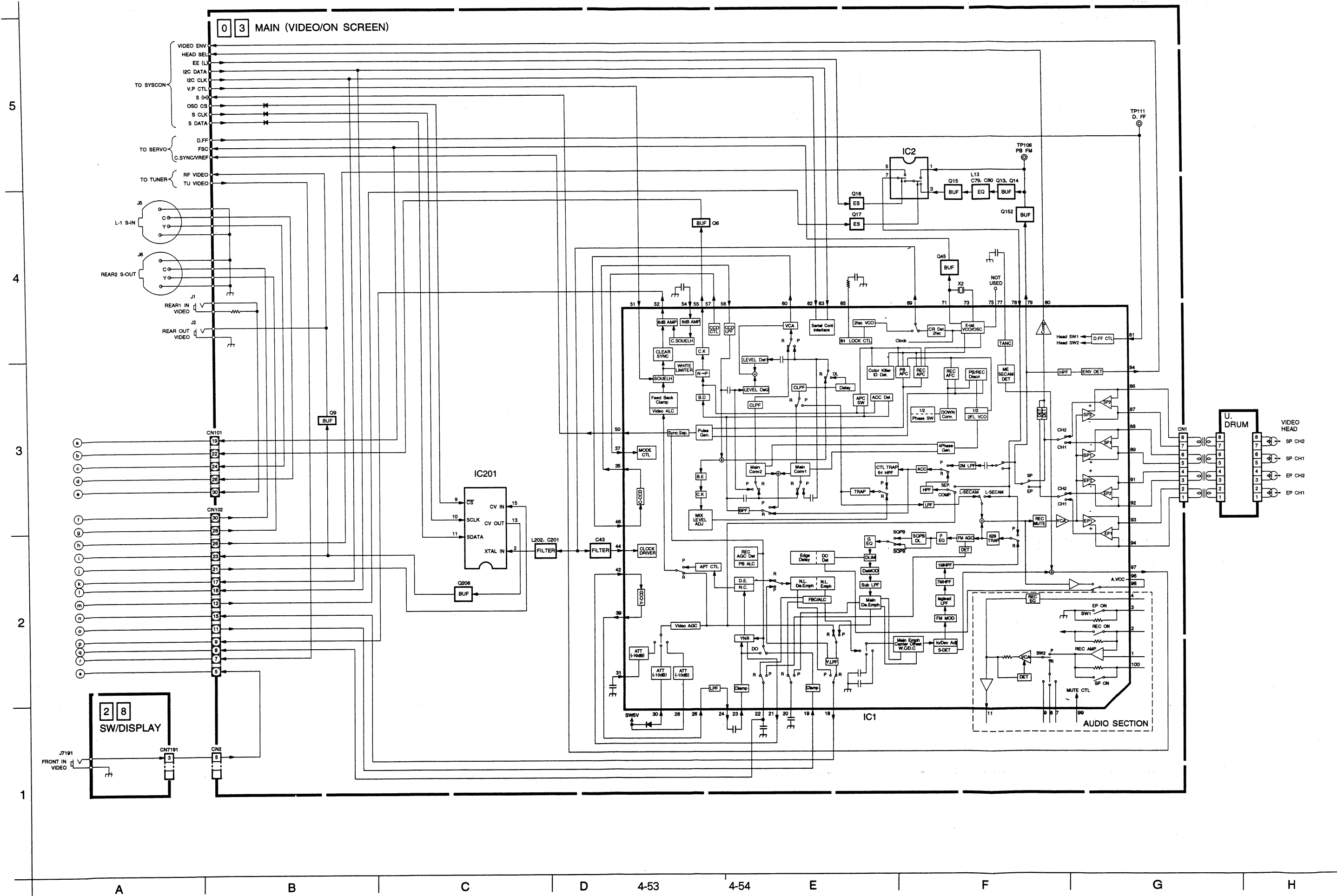
MODE PIN NO.	REC	PLAY
IC7401		
1	5.0	5.0
2	1.1	1.1
3	2.9	2.9
4	2.9	2.9
5	2.3	2.3
6	1.2	1.2
7	3.1	3.1
8	0.3	0.4
9	1.3	1.3
10	3.0	3.0
11	4.9	4.9
12	1.3	1.3
13	1.3	1.3
14	1.0	1.0
15	2.8	2.8
16	1.3	1.3
17	2.8	2.8
18	0.6	0.6
19	2.8	2.9
20	1.6	1.7
21	3.2	3.2
22	1.7	1.7
23	-	-
24	1.7	1.7
25	4.9	4.9

4.23 SYSTEM CONTROL/SERVO BLOCK DIAGRAM



5





3 MAIN (FMA/N. AUDIO)

The diagram illustrates the internal circuitry of a car stereo system, organized into a grid with columns labeled A through H and rows labeled 1 through 5.

Inputs and Connections:

- TO TUNER:** DEMOD (R), DEMOD (L), RF AUDIO.
- J1 REAR1 IN:** AUDIO (R), AUDIO (L).
- J2 REAR OUT:** AUDIO (R), AUDIO (L).
- TO MV/CM ADV:** MUSIC_SIG.
- J7193 FRONT IN:** AUDIO (R).
- J7192 FRONT IN:** AUDIO (L).

Internal ICs and Blocks:

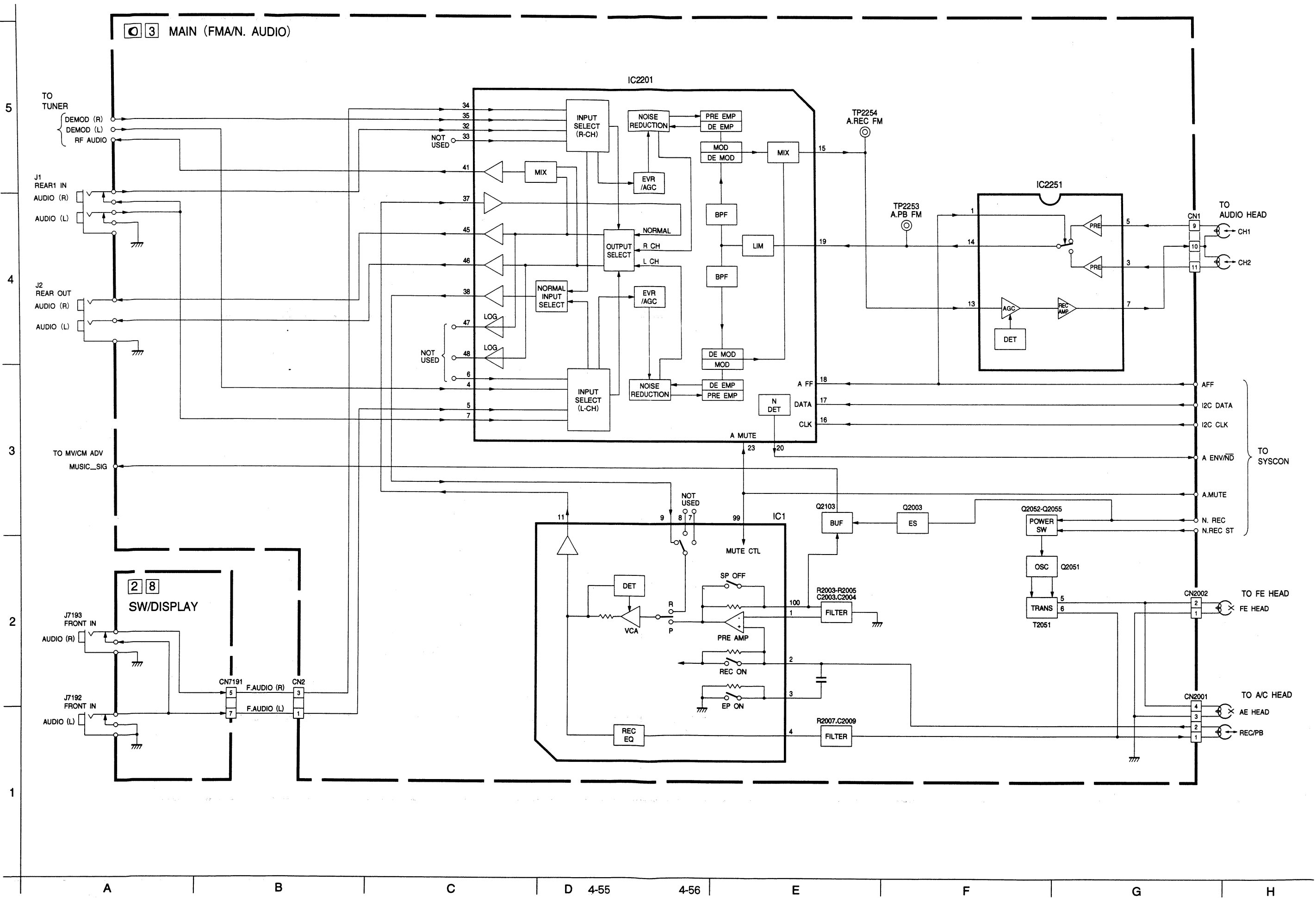
- IC2201:** Main processing IC. Includes INPUT SELECT (R-CH), INPUT SELECT (L-CH), NOISE REDUCTION, PRE EMP, DE EMP, MIX, BPF, LIM, AGC, DET, REC AMP, and various control lines (A FF, A MUTE, N DET, DATA, CLK).
- IC2251:** A.P.B. FM IC. Includes PRE, AGC, DET, REC AMP, and various control lines (A FF, A MUTE, N DET, DATA, CLK).
- IC1:** SW/DISPLAY IC. Includes DET, VCA, PRE AMP, REC ON, EP ON, REC EQ, and various control lines (MUTE CTL, SP OFF, R, P).

Power Supply and Output:

- Power Supply:** Transformer (T2051), Rectifier (Q2052-Q2055), Filter (R2003-R2005, C2003, C2004).
- Outputs:** TO AUDIO HEAD (CH1, CH2), TO FE HEAD (FE HEAD), TO A/C HEAD (AE HEAD, REC/PB).

Grid Labels:

- Columns:** A, B, C, D 4-55, 4-56, E, F, G, H.
- Rows:** 1, 2, 3, 4, 5.



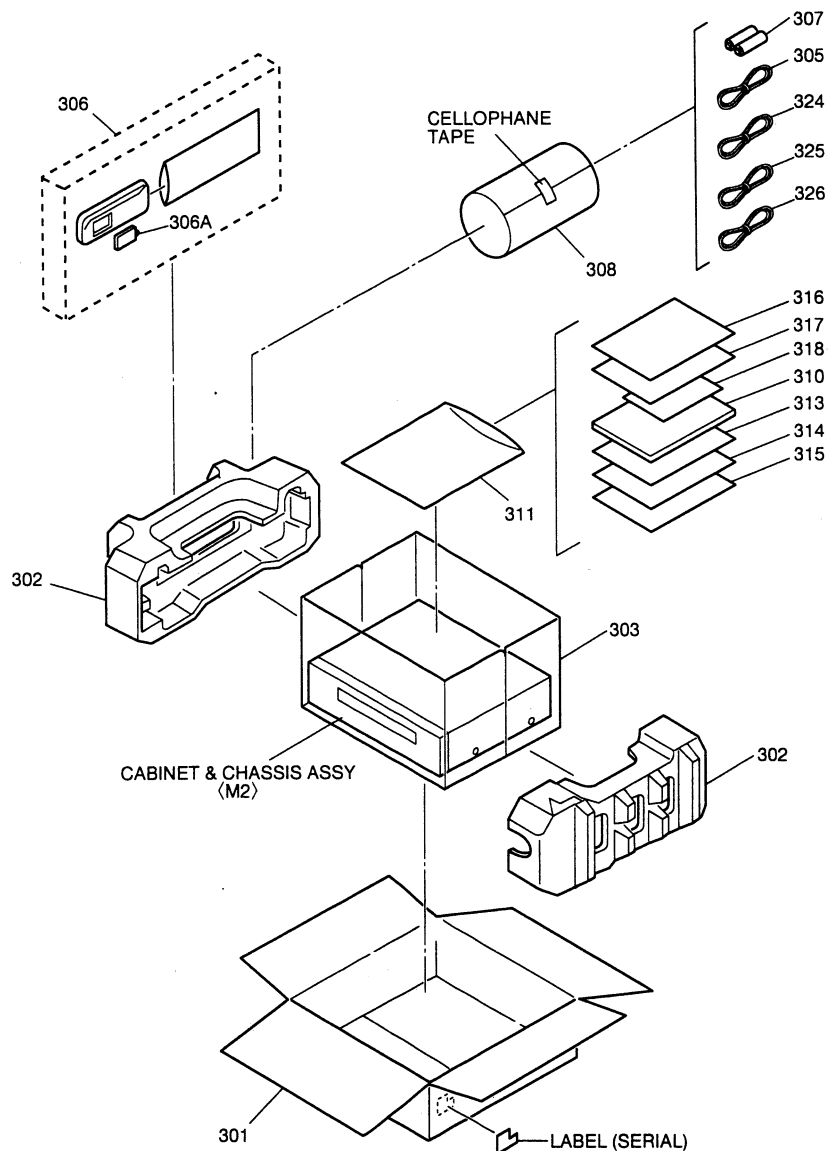
SECTION 5 PARTS LIST

SAFETY PRECAUTION

Parts identified by the $\triangle$ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.



# $\triangle$	REF No.	PART No.	PART NAME, DESCRIPTION
---------------	---------	----------	------------------------

PACKING AND ACCESSORY ASSEMBLY <M1>

301	LP30423-027B	PACKING CASE,S3500U
	LP30423-029B	PACKING CASE,S3500U(C)
302	LP30424-001C	CUSHION ASSY
303	PQM30021-93	POLY BAG
305	PEAC0294-04	RF CABLE
306	LP20337-003B	REMOTE CONTROLLER
306A	LP40254-001B	COVER(BATTERY)
307	-	BATTERY (R6P TYPE)
308	QPC02202230P	POLY BAG

# $\triangle$	REF No.	PART No.	PART NAME, DESCRIPTION
---------------	---------	----------	------------------------

$\triangle$	310	LPT0024-001A	INST BOOK(EN)
$\triangle$		LPT0024-003A	INST BOOK(FR),S3500U(C)
	311	QPC02503530P	POLY BAG
	313	LPT0024-002A	Q.S.SHEET,S3500U
	314	PU36560	CONNECTION SHEET,S3500U(C)
	315	BT-20071B	SER.NET CARD,S3500U(C)
	316	BT-52002-1	WARRANTY CARD,S3500U(C)
	317	BT-51006-1	REGIST.CARD,S3500U
	318	LP40437-001A	LABEL(S-VHS ET),S3500U
	324	PEAC0359-120	PIN CORD, A/V CABLE
	325	PEAC0358-120	S CABLE
	326	QAL0095-004	LED CABLE ASSY (CONTROLLER)

BEWARE OF BOGUS PARTS

*n regard to safety and performance. We recommend that
genuine JVC parts be used.*



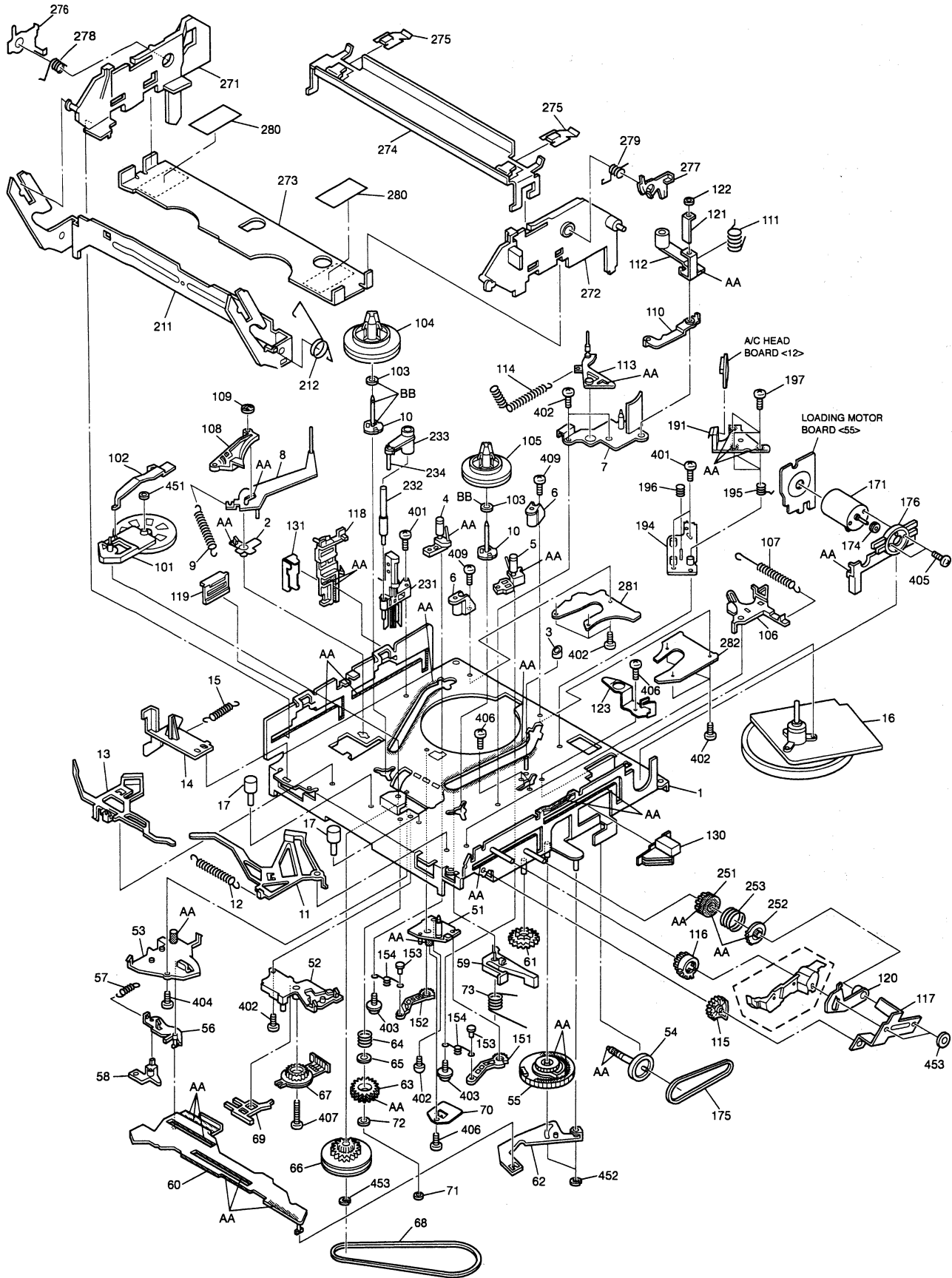
Δ REF No. PART No. PART NAME, DESCRIPTION

CABINET AND CHASSIS ASSEMBLY <M2>

Δ 550	LP10125-013D	FRONT PANEL ASSY
550A	LP20342-013B	CASSETTE DOOR
550B	PQ46448	TORSION SPRING
550C	LP20343-014B	DISPLAY WINDOW
Δ 551	PQ11676-49	TOP COVER
552	QYTDSF3010M	SCREW,TOP COVER(REAR)
553	QYTDSF3010M	SCREW,X4 TOP COVER(SIDE)
554	LP30120-001A	KNOB SHUTTLE
555	LP30121-001A	KNOB JOG
556	LP40407-001A	KNOB ASSY
558	LP40226-001A	PC SUPPORT,X2
559A	LP20289-003A	DRUM SUB ASSY
559B	LP20030-007A	UPPER DRUM ASSY
559D	LP40028-001A	COLLAR ASSY
559E	PDZ0179	ROTOR ASSY
559F	QYSPSP3006Z	SCREW,X2
559G	PDM4439	CAP
559H	PDZ0181-1-2	STATOR ASSY
559J	QYSPSP2606Z	SCREW,X2
559K	PDM4444-19-2	WASHER
559L	LP40323-001A	CONTACT
559M	LP30004-005A	COMPRESS.SPRING
559N	LP40174-001B	FPC PLATE
Δ 560	LP10116-001B	BOTTOM CHASSIS
Δ 563	PQ11668-2-9	BOTTOM COVER
564	QYTPST2608Z	SCREW,X3 DRUM
565	LP30312-001A	BRACKET(CHASSIS)
566	QYTDSF3010Z	SCREW,X2 BRACKET(CHASSIS)
567	QYTDSF4012Z	SCREW,X2 MECHA
568	QYTDSF3010Z	SCREW,X2 MECHA
569	QYTDSF3010M	SCREW,TERMINAL
570	QYTDSF3010Z	SCREW,X2 TERMINAL
Δ 571	QMP14K0-170	POWER CORD
572	QYTDSF2608Z	SCREW,X2 JOG
575	LP20324-002B	DOOR OPENER
579	LP40370-001B	ROLLER ARM ASSY
579A	PDM4311A-1	ROLLER ASS'Y
580	PQ44230	INERTIA PLATE
WR1	WJT0005-002A	E-CARD WIRE,AC/HEAD
WR2	QUQ212-0422CG	FFC WIRE,DRUM
WR3	QUQ112-1214CG	FFC WIRE,DISPLAY
WR4	QUQ212-0514CG	FFC WIRE,JACK
WR5	QUQ112-0716CG	WIRE,JOG

Δ REF No. PART No. PART NAME, DESCRIPTION

5.3 MECHANISM ASSEMBLY <M4>



Classifi- cation	Part No.	Symbol in drawing
Grease	KYODO-SH-P	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

△ REF No. PART No. PART NAME, DESCRIPTION

MECHANISM ASSEMBLY <M4>

1	LP20228-003D	MAIN DECK ASSY
2	LP30232-002A	T.ARM BEARING
3	LP40097-001B	G.POLE CAP
4	LP40101-002A	P.BASE ASSY(S)
5	LP40104-002A	P.BASE ASSY(T)
6	LP30409-002A	UV CATCHER 2,X2
7	LP20234-001C	LID GUIDE
8	LP40108-001A	TENSION ARM ASSY
9	LP30003-010A	TENSION SPRING
10	LP40123-001A	REEL SHAFT,X2
11	LP40111-002B	MAIN BRAKE AY (TAKE-UP)
12	LP30003-002A	TENSION SPRING
13	LP40110-002D	MAIN BRAKE ASSY (SUPPLY)
14	LP30245-001C	REC SAFTY LEVER
15	LP30003-004A	TENSION SPRING
16	QAR0032-003	CAPSTAN MOTOR
17	PQ46302-1-3	ADJUST PIN,X2
51	LP30223-003B	L.A.GEAR SHAFT
52	LP20233-003B	R.ENCODER GUIDE
53	LP30226-003B	CTL.PLATE GUIDE
54	LP40120-001A	WORM GEAR
55	LP30229-001B	CTL.CAM
56	LP30249-003B	T.UP LEVER
57	LP30003-006A	TENSION SPRING
58	LP40119-002A	T.UP HEAD
59	LP40113-001A	C.BRAKE ASSY
60	LP10080-002E	CTL.PLATE
61	LP30237-002A	CASSETTE GEAR
62	LP40107-002A	LINK LEVER ASSY
63	LP40122-001A	DIRECT GEAR
64	LP40224-001B	COMPRESSION SPRING
65	LP30017-002A	SPACER,D.GEAR
66	LP40115-002C	CLUTCH UNIT
67	QSW0554-002	ROTARY ENCODER
68	LP30005-005A	BELT,CAP.MOTOR
69	LP30235-002A	CHANGE LEVER
70	LP40379-001A	CTL BRACKET(1)
71	LP30016-001A	SLIT WASHER
72	LP30017-009A	SPACER,D.GEAR
73	LP40355-002A	TORSION SPRING
101	LP40114-002D	IDLER ARM ASSY
102	LP30236-002A	IDLER LEVER
103	LP30017-010A	SPACER,X2 REEL DISK
104	LP20237-001B	REEL DISK (SUPPLY)
105	LP20238-001B	REEL DISK (TAKE-UP)
106	LP40112-001D	S.BRAKE(T)ASSY
107	LP40357-001B	TENSION SPRING
108	LP40109-002C	T.BRAKE ASSY
109	PQ46302-1-3	ADJUST PIN
110	LP40149-001B	P.LEVER ASSY
111	LP40148-001A	TORSION SPRING
112	LP40105-001A	P.R.ARM ASSY
113	LP40106-001B	GUIDE ARM ASSY
114	LP40134-001B	TENSION SPRING
115	LP30243-001B	DRIVE GEAR
116	LP30242-001A	RELAY GEAR
117	LP40214-001A	C.H.BRACKET
118	LP30244-001D	GUIDE RAIL
119	LP40118-001A	RAIL CAP

△ REF No. PART No. PART NAME, DESCRIPTION

120	LP30339-001A	OPENER GUIDE
121	LP40382-001A	P.R. SHEET
122	LP30016-002A	SLIT WASHER
123	LP30482-001A	P.ROLLER GUIDE
130	LP30493-001A	START SENSOR CAP
131	LP40457-001A	END SENSOR SHEET 2
151	LP40103-002A	L.ARM GEAR(T)
152	LP30224-001A	L.ARM GEAR(S)
153	LP40100-001A	PIN,L.ARM GEAR(S)
	LP40100-001A	PIN,L.ARM GEAR(T)
154	LP40099-001A	TORSION ARM,L.ARM GEAR(S)
	LP40099-001A	TORSION ARM,L.ARM.GEAR(T)
171	QAR0023-001	LOADING MOTOR
174	PQ43546-1-2	MOTOR PULLEY
175	LP30005-003A	BELT,LOADING MOTOR
176	LP30230-001B	MOTOR GUIDE
191	QAH0010-002	AC HEAD
194	LP30228-001A	HEAD BASE
195	LP30004-012A	COMPRES.SPRING X3
196	LP40236-001A	COMPRESSION SPRING
197	LP40213-002B	SPECIAL SCREW,X3
211	LP20240-001B	DRIVE ARM
212	LP40137-001A	TORSION SPRING
231	NAH0001-001	FULL ERASE HEAD
232	LP40098-001B	GUIDE POLE(S)
233	LP30395-001B	T.STUD BASE
234	LP40367-001A	TENSION STUD
251	LP30239-002E	LIMIT GEAR(1)
252	LP30240-002C	LIMIT GEAR(2)
253	LP40136-001D	TORSION SPRING
271	LP10081-001C	SIDE HOLDER(L)
272	LP40403-001B	S.HOLDER(R)ASSY
273	LP30257-001C	CASSETTE HOLDER
274	LP20241-001C	TOP PLATE
275	LP30258-001B	SPRING PLATE,X2
276	LP30255-001F	LOCK LEVER(L)
277	LP30256-001D	LOCK LEVER(R)
278	LP40168-001A	TOR.SPRING(L)
279	LP40218-001B	TOR.SPRING(R)
280	LP30019-006C	PAD,X2
281	LP40275-001A	PLATE(S)
282	LP40276-001A	PLATE(T)
286	LP40427-001A	P.BASE WASHER
401	QYTDST2608Z	SCREW,FE.HEAD
	QYTDST2608Z	SCREW,X2 HEAD BASE
402	QYTDST2606Z	SCREW,X6 PLATE(S)(T)
	QYTDST2606Z	SCREW,L.A.GEAR
	QYTDST2606Z	SCREW,R.ENCODER GUIDE
	QYTDST2606Z	SCREW,X2 LID GUIDE
403	QYSPSTG2606Z	SCREW,POLE BASE(S)
	QYSPSTG2606Z	SCREW,POLE BASE(T)
404	QYTPST2605Z	SCREW,CTL.PLATE GUIDE
405	QYTPSP3003Z	SCREW,X2 LOADING MOTOR
406	QYTDSF2608M	SCREW,CTL BRACKET(1)
	QYTDSF2608M	SCREW,X3 CAP.MOTOR
407	QYTPST2620Z	SCREW,R.ENCODER
409	QYTPST2606Z	SCREW,X2 UV CATCHER
451	LP30016-001A	SLIT WASHER,IDLER ARM
452	PQM30017-24	SLIT WASHER,CTL.CAM
	PQM30017-24	SLIT WASHER,LINK LEVER
453	PQM30017-47	SLIT WASHER,CLUTCH GEAR
	PQM30017-47	SLIT WASHER,X2 C.H.BRACKET

3.4 ELECTRICAL PARTS LIST

REF No. PART No. PART NAME, DESCRIPTION

MAIN BOARD ASSEMBLY <03>

PW1	LPA10028-09D 1	MAIN BOARD ASSY
IC1	JCP8016-NSB	IC
IC2	MM1113XF	IC
IC201	LC74785-9644	IC (OSD)
IC2201	AN3665FB	IC
IC2251	AN3328S	IC
IC3001	HD6433928TBO7F	QFP IC (MCU)
IC3002	TA7291S	IC
IC3003	S-80728AN-DR-X	IC
IC3004	PTU96120-11-004	IC
IC3301	HD6433926TB27F	QFP IC (MCU)
IC4001	BU2881BS	IC
	or BU2882BS	IC
IC5301	LA5613	IC
Q6	2SA1576A/QRS/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q9	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q13	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q14	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q15	2SA1576A/QRS/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q16	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q17	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q18	DTC124EU	TRANSISTOR
Q21	DTC114EU	TRANSISTOR
	or RN1302	TRANSISTOR
	or UN5211	TRANSISTOR
Q44	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q45	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q49	2SC3936/BC/-X	TRANSISTOR
Q101	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q152	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q201	2SA1576A/QRS/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q202	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR

△ REF No. PART No. PART NAME, DESCRIPTION

	or 2SD1819A/QRS/-X	TRANSISTOR
Q207	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q208	2SA1576A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
Q209	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2001	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2002	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2003	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2051	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2052	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2053	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2054	2SA1576A/QR/-X	TRANSISTOR
	or 2SB1218A/QR/-X	TRANSISTOR
	or 2PA1576/R/-X	TRANSISTOR
Q2055	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2103	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q2251	DTA144WU	TRANSISTOR
	or RN2309	TRANSISTOR
	or UN511E	TRANSISTOR
Q2253	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q2256	DTC114EU	TRANSISTOR
	or RN1302	TRANSISTOR
	or UN5211	TRANSISTOR
Q2257	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q3001	PTZ-NV09	PHOTO TRANSISTOR
	or PTZ-NV16	PHOTO TRANSISTOR
Q3002	PTZ-NV09	PHOTO TRANSISTOR
	or PTZ-NV16	PHOTO TRANSISTOR
Q3003	2SC4081/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
Q3005	2SC4081/QRS/-X	TRANSISTOR
	or 2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR

▲ REF No. PART No. PART NAME, DESCRIPTION

Q3006	DTC144WU	TRANSISTOR
	or RN1309	TRANSISTOR
	or UN521E	TRANSISTOR
Q3007	2SB1256	TRANSISTOR
Q5101	2SK2043-CB14	FE TRANSISTOR
	or 2SK2043	FE TRANSISTOR
	or 2SK2324	FE TRANSISTOR
	or 2SK1953	FE TRANSISTOR
	or 2SK2324-LT	MOS FET
Q5102	2SD2144S/UV/-T	TRANSISTOR
Q5317	2SD2061/F/	TRANSISTOR
Q5318	2SD1819A/RS/-X	TRANSISTOR
	or 2SC4081/RS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
Q5451	2SB927/ST/-T	TRANSISTOR
Q5452	DTC144EU	TRANSISTOR
Q6001	2SC3243/DE/-T	TRANSISTOR
Q6031	UN5216	TRANSISTOR
	or DTC143TU	TRANSISTOR
D16	1N4148M	DIODE
	or 1SS133	DIODE
D20	1N4148M	DIODE
	or 1SS133	DIODE
D201	1N4148M	DIODE
	or 1SS133	DIODE
D202	1N4148M	DIODE
	or 1SS133	DIODE
D207	1N4148M	DIODE
	or 1SS133	DIODE
D208	1SS133	DIODE
D2001	1N4148M	DIODE
	or 1SS133	DIODE
D2201	11ES2	DIODE
D2253	1N4148M	DIODE
	or 1SS133	DIODE
D3001	LNB2301L01VI	LE DIODE
D3002	11ES2	DIODE
D3003	11ES2	DIODE
D3005	RD39ES/B3/-T2	ZENER DIODE
D3007	1N4148M	DIODE
	or 1SS133	DIODE
D3008	DAP202U	DIODE
D3011	1N4148M	DIODE
	or 1SS133	DIODE
D3012	1N4148M	DIODE
	or 1SS133	DIODE
D3013	1N4148M	DIODE
	or 1SS133	DIODE
D3014	1N4148M	DIODE
	or 1SS133	DIODE
D3015	1N4148M	DIODE
	or 1SS133	DIODE
D3016	DAN202U	DIODE
D5001	S1WB(A)60F4102	BRIDGE DIODE
	or S1WB(A)60F4062X	BRIDGE DIODE
	or S1WB(A)60F4072X	BRIDGE DIODE
D5101	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or PG104RS	FR DIODE
	or 1SR153-400-T2	FR DIODE
	or 10ELS4	FR DIODE

▲ REF No. PART No. PART NAME, DESCRIPTION

D5102	AU01	FR DIODE
	or ERA18-04-T2	FR DIODE
	or PG104RS	FR DIODE
	or 10ELS4	FR DIODE
	or 1SR153-400-T2	FR DIODE
D5103	1N4148M	DIODE
	or 1SS133	DIODE
D5104	UZ15BSC	ZENER DIODE
	or RD15ES/B3/-T2	ZENER DIODE
	or MTZJ15C	ZENER DIODE
D5201	ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
D5203	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
	or PG104RS	FR DIODE
D5204	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
	or PG104RS	FR DIODE
D5205	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or PG104RS	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
D5206	FMB-24	BARRIER DIODE
	or MA7D49	SB DIODE
	or YG801C04	SB DIODE
	or F5KQ40B	BARRIER DIODE
D5210	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or 1SR153-200-T2	FR DIODE
	or 10ELS2	FR DIODE
	or PG104RS	FR DIODE
D5211	AU01Z	FR DIODE
	or ERA18-02-T2	FR DIODE
	or PG104RS	FR DIODE
	or 10ELS2	FR DIODE
	or 1SR153-200-T2	FR DIODE
D5301	UZ15BSA	ZENER DIODE
	or RD15ES/B1/-T2	ZENER DIODE
	or MTZJ15A	ZENER DIODE
D5302	11E2-T5	DIODE
D5304	1N4148M	DIODE
	or 1SS133	DIODE
D5305	UZ30BSA	ZENER DIODE
	or RD30ES/B1/-T2	ZENER DIODE
	or MTZJ30A	ZENER DIODE
D5306	UZ6.8BSA	ZENER DIODE
	or MTZJ6.8A	ZENER DIODE
	or RD6.8ES/B1/-T2	ZENER DIODE
D5313	RD5.1JS/B2/-T2	ZENER DIODE
	or MA4051N/M/-T2	ZENER DIODE
D5314	1N4148M	DIODE
	or 1SS133	DIODE
D5351	11E2-T5	DIODE
D5352	11E2-T5	DIODE

REF No.	PART No.	PART NAME, DESCRIPTION	#	△ REF No.	PART No.	PART NAME, DESCRIPTION
D5353	11E2-T5	DIODE		R212	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
D6001	MTZJ10B	ZENER DIODE		R213	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W
D6002	HZ30-2L-T2	ZENER DIODE		R214	NRSA02J-331X	MG RESISTOR 330Ω, 1/10W
	or HZ30-2LTD	Z DIODE (M)		R217	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W
R1	NRSA02J-471X	MG RESISTOR 470Ω, 1/10W		R218	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W
R2	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W		R228	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R3	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W		R230	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R6	NRSA02J-122X	MG RESISTOR 1.2kΩ, 1/10W		R231	NRSA02J-331X	MG RESISTOR 330Ω, 1/10W
R7	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W		R232	NRSA02J-331X	MG RESISTOR 330Ω, 1/10W
R10	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W		R233	NRSA02J-471X	MG RESISTOR 470Ω, 1/10W
R11	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2001	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R16	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2002	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R23	NRSA02J-332X	MG RESISTOR 3.3kΩ, 1/10W		R2003	NRSA02J-682X	MG RESISTOR 6.8kΩ, 1/10W
R24	NRVA02D-622X	CMF RESISTOR 6.2kΩ, 1/10W		R2004	NRSA02J-224X	MG RESISTOR 220kΩ, 1/10W
R25	NRVA02D-152X	CMF RESISTOR 1.5kΩ, 1/10W		R2005	NRSA02J-181X	MG RESISTOR 180Ω, 1/10W
R29	QRE123J-331X	RESISTOR 330Ω, 1/2W		R2006	NRSA02J-273X	MG RESISTOR 27kΩ, 1/10W
R30	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2007	NRSA02J-153X	MG RESISTOR 15kΩ, 1/10W
R32	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2013	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R33	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W		R2016	NRSA02J-221X	MG RESISTOR 220Ω, 1/10W
R34	NRSA02J-272X	MG RESISTOR 2.7kΩ, 1/10W		R2018	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W
R44	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W		R2019	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W
R48	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W		R2053	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W
R49	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W		R2054	NRSA02J-123X	MG RESISTOR 12kΩ, 1/10W
R50	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2055	NRSA02J-3R3X	MG RESISTOR 3.3Ω, 1/10W
R52	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2056	QRE141J-680Y	RESISTOR 68Ω, 1/4W
R54	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2057	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R55	NRSA02J-122X	MG RESISTOR 1.2kΩ, 1/10W		R2058	NRSA02J-183X	MG RESISTOR 18kΩ, 1/10W
R57	NRSA02J-152X	MG RESISTOR 1.5kΩ, 1/10W		R2059	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R59	NRSA02J-125X	MG RESISTOR 1.2MΩ, 1/10W		R2060	NRSA02J-183X	MG RESISTOR 18kΩ, 1/10W
R60	NRSA02J-183X	MG RESISTOR 18kΩ, 1/10W		R2106	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R61	NRSA02J-153X	MG RESISTOR 15kΩ, 1/10W		R2107	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R62	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2201	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R64	NRSA02J-563X	MG RESISTOR 56kΩ, 1/10W		R2202	NRSA02J-333X	MG RESISTOR 33kΩ, 1/10W
R68	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2203	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R69	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2205	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R71	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W		R2206	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R75	NRVA02D-153X	MG RESISTOR 15kΩ, 1/10W		R2207	NRSA02J-682X	MG RESISTOR 6.8kΩ, 1/10W
R94	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2209	NRSA02J-682X	MG RESISTOR 6.8kΩ, 1/10W
R101	NRSA02J-392X	MG RESISTOR 3.9kΩ, 1/10W		R2210	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W
R113	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W		R2211	NRSA02J-511X	MG RESISTOR 510Ω, 1/10W
R116	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2213	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W
R117	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2214	NRSA02J-511X	MG RESISTOR 510Ω, 1/10W
R133	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2215	NRSA02J-682X	MG RESISTOR 6.8kΩ, 1/10W
R134	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2217	NRSA02J-682X	MG RESISTOR 6.8kΩ, 1/10W
R138	NRSA02J-392X	MG RESISTOR 3.9kΩ, 1/10W		R2218	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R139	NRSA02J-823X	MG RESISTOR 82kΩ, 1/10W		R2219	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R140	NRSA02J-224X	MG RESISTOR 220kΩ, 1/10W		R2221	NRSA02J-473X	MG RESISTOR 47kΩ, 1/10W
R144	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2222	NRSA02J-333X	MG RESISTOR 33kΩ, 1/10W
R145	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2223	NRSA02J-182X	MG RESISTOR 1.8kΩ, 1/10W
R146	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2224	NRSA02J-471X	MG RESISTOR 470Ω, 1/10W
R147	NRSA02J-750X	MG RESISTOR 75Ω, 1/10W		R2225	NRSA02J-221X	MG RESISTOR 220Ω, 1/10W
R170	NRSA02J-822X	MG RESISTOR 8.2kΩ, 1/10W		R2226	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R171	NRSA02J-472X	MG RESISTOR 4.7kΩ, 1/10W		R2228	NRSA02J-221X	MG RESISTOR 220Ω, 1/10W
R177	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W		R2229	NRSA02J-221X	MG RESISTOR 220Ω, 1/10W
R202	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2251	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W
R203	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2253	QRE141J-270Y	RESISTOR 27Ω, 1/4W
R204	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W		R2254	NRSA02J-220X	MG RESISTOR 22Ω, 1/10W
R205	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W		R2256	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R206	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W		R2257	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W
R208	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W		R2258	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R209	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W		R2259	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
R2260			NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W
R2261			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R2262			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R2601			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R2602			NRSA02J-821X	MG RESISTOR	820Ω, 1/10W
R2604			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R2605			NRSA02J-821X	MG RESISTOR	820Ω, 1/10W
R2607			NRSA02J-101X	MG RESISTOR	100Ω, 1/10W
R2608			NRSA02J-101X	MG RESISTOR	100Ω, 1/10W
R2711			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R2712			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3003			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3004			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3010			NRSA02J-105X	MG RESISTOR	1MΩ, 1/10W
R3015			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3016			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3017			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R3020			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3022			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3023			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3025			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3028			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3029			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3030			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3031			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3032			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3033			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3034			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3035			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3036			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3037			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3038			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3039			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3040			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3041			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3042			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3043			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3044			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3045			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3046			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3047			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3049			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3050			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3051			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3053			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3054			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3055			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3056			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3057			NRSA02J-101X	MG RESISTOR	100Ω, 1/10W
R3058			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3059			NRSA02J-101X	MG RESISTOR	100Ω, 1/10W
R3061			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3062			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3064			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3065			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3066			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3067			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3069			NRSA02J-271X	MG RESISTOR	270Ω, 1/10W
R3070			NRSA02J-271X	MG RESISTOR	270Ω, 1/10W
R3071			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3073			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
R3074			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3075			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3076			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3077			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3078			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3079			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3201			NRSA02J-104X	MG RESISTOR	100kΩ, 1/10W
R3203			NRSA02J-562X	MG RESISTOR	5.6kΩ, 1/10W
R3204			NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W
R3205			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3206			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3207			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3209			QRE141J-181Y	RESISTOR	180Ω, 1/4W
R3210			NRSA02J-183X	MG RESISTOR	18kΩ, 1/10W
R3211			NRSA02J-183X	MG RESISTOR	18kΩ, 1/10W
R3212			NRSA02J-181X	MG RESISTOR	180Ω, 1/10W
R3213			NRSA02J-273X	MG RESISTOR	27kΩ, 1/10W
R3214			NRSA02J-181X	MG RESISTOR	180Ω, 1/10W
R3215			NRSA02J-273X	MG RESISTOR	27kΩ, 1/10W
R3216			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R3217			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R3218			NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W
R3219			QRL01DJ-100X	OMF RESISTOR	10Ω, 1W
R3220			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3223			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3224			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3225			NRSA02J-104X	MG RESISTOR	100kΩ, 1/10W
R3226			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3227			NRSA02J-393X	MG RESISTOR	39kΩ, 1/10W
R3228			NRSA02J-474X	MG RESISTOR	470kΩ, 1/10W
R3229			NRSA02J-334X	MG RESISTOR	330kΩ, 1/10W
R3230			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3231			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3232			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3233			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3234			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3235			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R3236			NRSA02J-221X	MG RESISTOR	220Ω, 1/10W
R3237			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3238			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3239			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3240			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3241			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3242			NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R3243			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3246			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3247			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3248			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3251			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3253			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3255			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3256			NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R3301			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3302			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R3303			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3304			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3310			NRSA02J-105X	MG RESISTOR	1MΩ, 1/10W
R3314			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3315			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3316			NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W
R3318			NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W

REF No.	PART No.	PART NAME, DESCRIPTION		#	△ REF No.	PART No.	PART NAME, DESCRIPTION
R3319	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R4014	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R3320	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R4106	NRSA02J-222X	MG RESISTOR 2.2kΩ, 1/10W
R3321	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R4109	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R3322	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W	△	R5001	QRC122K-475U	COMP RESISTOR 4.7MΩ, 1/2W
R3323	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R5101	QRE141J-224Y	RESISTOR 220kΩ, 1/4W
R3324	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R5102	QRE141J-224Y	RESISTOR 220kΩ, 1/4W
R3325	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R5103	QRE141J-683Y	RESISTOR 68kΩ, 1/4W
R3326	NRSA02J-332X	MG RESISTOR	3.3kΩ, 1/10W		R5104	QRG02GJ-683	OMF RESISTOR 68kΩ, 2W
R3327	NRSA02J-332X	MG RESISTOR	3.3kΩ, 1/10W		R5106	QRT01DJ-R39X	MF RESISTOR 0.39Ω, 1W
R3329	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5107	QRE121J-331Y	RESISTOR 330Ω, 1/2W
R3330	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5108	NRSA02J-152X	MG RESISTOR 1.5kΩ, 1/10W
R3331	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5109	NRSA02J-681X	MG RESISTOR 680Ω, 1/10W
R3334	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5110	NRSA02J-224X	MG RESISTOR 220kΩ, 1/10W
R3335	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5301	NRSA02J-3R3X	MG RESISTOR 3.3Ω, 1/10W
R3336	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5302	NRSA02J-3R3X	MG RESISTOR 3.3Ω, 1/10W
R3337	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5303	NRSA02J-3R3X	MG RESISTOR 3.3Ω, 1/10W
R3338	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5304	NRSA02J-2R7X	MG RESISTOR 2.7Ω, 1/10W
R3339	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5306	NRSA02J-223X	MG RESISTOR 22kΩ, 1/10W
R3340	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5307	QRE141J-471Y	RESISTOR 470Ω, 1/4W
R3341	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5312	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R3342	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R5313	NRSA02J-122X	MG RESISTOR 1.2kΩ, 1/10W
R3343	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W	△	R5314	QRZ9005-101X	FUSI RESISTOR 100Ω, 1/4W
R3344	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5344	NRSA02J-471X	MG RESISTOR 470Ω, 1/10W
R3345	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5345	NRSA02J-471X	MG RESISTOR 470Ω, 1/10W
R3346	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5346	NRSA02J-102X	MG RESISTOR 1kΩ, 1/10W
R3347	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5347	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R3352	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R5451	NRSA02J-103X	MG RESISTOR 10kΩ, 1/10W
R3358	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R5452	QRE123J-331X	RESISTOR 330Ω, 1/2W
R3360	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6001	NRSA02J-271X	MG RESISTOR 270Ω, 1/10W
R3362	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6002	NRSA02J-101X	MG RESISTOR 100Ω, 1/10W
R3364	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6020	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3366	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R6021	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3367	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6022	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3368	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6023	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3369	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R6032	NRSA02J-393X	MG RESISTOR 39kΩ, 1/10W
R3370	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R6034	NRSA02J-105X	MG RESISTOR 1MΩ, 1/10W
R3371	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R6038	NRSA02J-562X	MG RESISTOR 5.6kΩ, 1/10W
R3373	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R6050	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3374	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		R6053	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3375	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W		R6508	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3376	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		R6510	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3378	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		VR2251	QVPA606-102Z	V RESISTOR, A.REC FM LEVEL
R3379	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		C1	QERF1CM-106	E CAPACITOR 10μF, 16V
R3380	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		C2	NCF21CZ-105X	CAPACITOR 1μF, 16V
R3501	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C3	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3502	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C4	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3503	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C5	NCF21CZ-105X	CAPACITOR 1μF, 16V
R3505	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C6	NCB21EK-104X	CAPACITOR 0.1μF, 25V
R3506	NRSA02J-472X	MG RESISTOR	4.7kΩ, 1/10W		C7	QERF1AM-227	E CAPACITOR 220μF, 10V
R3507	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C8	NCF21CZ-105X	CAPACITOR 1μF, 16V
R3509	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C9	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3510	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C10	NRSA02J-0R0X	MG RESISTOR 0Ω, 1/10W
R3517	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C11	NCF21CZ-105X	CAPACITOR 1μF, 16V
R4001	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W		C12	NCB21EK-473X	CAPACITOR 0.047μF, 25V
R4003	NRSA02J-122X	MG RESISTOR	1.2kΩ, 1/10W		C13	QEKJ1HM-335	E CAPACITOR 3.3μF, 50V
R4005	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C14	NCB21EK-333X	CAPACITOR 0.033μF, 25V
R4008	NRSA02J-562X	MG RESISTOR	5.6kΩ, 1/10W		C16	NCF21CZ-105X	CAPACITOR 1μF, 16V
R4009	NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W		C18	NDC21HJ-120X	CAPACITOR 12pF, 50V
R4011	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C20	NBE20JM-225X	T CAPACITOR 2.2μF, 6.3V
R4012	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W		C21	NCB21HK-472X	CAPACITOR 0.0047μF, 50V
R4013	NRSA02J-562X	MG RESISTOR	5.6kΩ, 1/10W		C23	NCB21EK-223X	CAPACITOR 0.022μF, 25V

#	△	REF No.	PART No.	PART NAME, DESCRIPTION		#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
C24			NCF21CZ-474X	CAPACITOR	0.47μF,16V	C212			NCB21HK-103X	CAPACITOR	0.01μF,50V
C25			NCB21EK-683X	CAPACITOR	0.068μF,25V	C213			QEKJ1HM-105	E CAPACITOR	1μF,50V
C29			NBE20JM-475X	T CAPACITOR	4.7μF,6.3V	C214			NCB21CK-224X	CAPACITOR	0.22μF,16V
C30			NBE20JM-475X	T CAPACITOR	4.7μF,6.3V	C215			QEKJ0JM-337	E CAPACITOR	330μF,6.3V
C31			NCB21EK-223X	CAPACITOR	0.022μF,25V	C220			NDC21HJ-7R0X	CAPACITOR	7pF,50V
C32			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2002			QEKJ1CM-476	E CAPACITOR	47μF,16V
C34			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2003			NCB21HK-123X	CAPACITOR	0.012μF,50V
C36			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2004			QEKJ1CM-226	E CAPACITOR	22μF,16V
C37			QEKJ0JM-107	E CAPACITOR	100μF,6.3V	C2005			NCB21HK-102X	CAPACITOR	0.001μF,50V
C41			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2007			QEKJ1CM-106	E CAPACITOR	10μF,16V
C42			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2008			NCB21HK-152X	CAPACITOR	0.0015μF,50V
C43			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2009			QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C45			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2010			QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C47			NCB21HK-102X	CAPACITOR	0.001μF,50V	C2013			NCB21EK-333X	CAPACITOR	0.033μF,25V
C48			QEKJ0JM-476	E CAPACITOR	47μF,6.3V	C2015			QEKJ1CM-226	E CAPACITOR	22μF,16V
C49			NDC21HJ-331X	CAPACITOR	330pF,50V	C2016			QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C54			QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C2051			NCB21HK-331X	CAPACITOR	330pF,50V
C55			QEKJ1CM-106	E CAPACITOR	10μF,16V	C2052			QFV61HJ-823	F CAPACITOR	0.082μF,50V
C56			QEKJ1HM-335	E CAPACITOR	3.3μF,50V	C2053			NCB21HK-472X	CAPACITOR	0.0047μF,50V
C57			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2054			NCB21EK-223X	CAPACITOR	0.022μF,25V
C58			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2055			QEKJ1CM-106	E CAPACITOR	10μF,16V
C59			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2202			QETC1CM-226	E CAPACITOR	22μF,16V
C61			NDC21HJ-120X	CAPACITOR	12pF,50V	C2207			NCB21CK-473X	CAPACITOR	0.047μF,16V
C62			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2208			QETC1CM-476	E CAPACITOR	47μF,16V
C63			NDC21HG-151X	CAPACITOR	150pF,50V	C2209			QETC1HM-225	E CAPACITOR	2.2μF,50V
C64			QEKJ0JM-107	E CAPACITOR	100μF,6.3V	C2210			QETC1CM-476	E CAPACITOR	47μF,16V
C65			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2211			NCB21HK-153X	CAPACITOR	0.015μF,50V
C66			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2212			NCB21HK-103X	CAPACITOR	0.01μF,50V
C67			QETC1CM-476	E CAPACITOR	47μF,16V	C2213			QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C68			QETC0JM-477	E CAPACITOR	470μF,6.3V	C2214			NCB21HK-103X	CAPACITOR	0.01μF,50V
C73			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2215			QEKJ1HM-224	E CAPACITOR	0.22μF,50V
C74			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	C2216			QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C77			NDC21HJ-470X	CAPACITOR	47pF,50V	C2217			NCB21HK-103X	CAPACITOR	0.01μF,50V
C79			NDC21HJ-100X	CAPACITOR	10pF,50V	C2218			NCB21HK-153X	CAPACITOR	0.015μF,50V
C80			NDC21HJ-150X	CAPACITOR	15pF,50V	C2219			QETC1CM-476	E CAPACITOR	47μF,16V
C85			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2220			QETC1HM-225	E CAPACITOR	2.2μF,50V
C86			NBE20JM-226X	T CAPACITOR	22μF,6.3V	C2221			NCB21CK-473X	CAPACITOR	0.047μF,16V
C87			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2222			QEKJ1CM-476	E CAPACITOR	47μF,16V
C88			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2227			QEKJ1HM-224	E CAPACITOR	0.22μF,50V
C89			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2228			QEKJ1CM-476	E CAPACITOR	47μF,16V
C90			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2229			QEKJ1CM-226	E CAPACITOR	22μF,16V
C91			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2230			QEKJ1CM-106	E CAPACITOR	10μF,16V
C92			NDC21HJ-220X	CAPACITOR	22pF,50V	C2231			QEKJ1CM-106	E CAPACITOR	10μF,16V
C99			NDC21HJ-220X	CAPACITOR	22pF,50V	C2232			QEKJ1CM-106	E CAPACITOR	10μF,16V
C107			NDC21HJ-4R0X	CAPACITOR	4pF,50V	C2235			NCB21HK-103X	CAPACITOR	0.01μF,50V
C108			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2251			NCB21HK-103X	CAPACITOR	0.01μF,50V
C119			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2252			NCB21HK-103X	CAPACITOR	0.01μF,50V
C120			NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	C2253			NCB21HK-103X	CAPACITOR	0.01μF,50V
C133			NCB21EK-104X	CAPACITOR	0.1μF,25V	C2254			QEKJ1CM-476	E CAPACITOR	47μF,16V
C138			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2255			NCB21CK-104X	CAPACITOR	0.1μF,16V
C140			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2256			NDC21HJ-101X	CAPACITOR	100pF,50V
C158			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2257			NCB21HK-103X	CAPACITOR	0.01μF,50V
C167			NDC21HG-5R0X	CAPACITOR	5pF,50V	C2258			NCB21HK-223X	CAPACITOR	0.022μF,50V
C201			NCB21HK-103X	CAPACITOR	0.01μF,50V	C2259			NCB21HK-103X	CAPACITOR	0.01μF,50V
C202			NDC21HJ-7R0X	CAPACITOR	7pF,50V	C2261			NCB21HK-103X	CAPACITOR	0.01μF,50V
C203			NDC21HJ-330X	CAPACITOR	33pF,50V	C3001			QEKJ1CM-336	E CAPACITOR	33μF,16V
C204			NDC21HJ-330X	CAPACITOR	33pF,50V	C3004			QETN0JM-228	E CAPACITOR	2200μF,6.3V
C207			NCB21CK-224X	CAPACITOR	0.22μF,16V	C3006			NCF21EZ-473X	CAPACITOR	0.047μF,25V
C208			NDC21HJ-680X	CAPACITOR	68pF,50V	C3012			NCF21EZ-104X	CAPACITOR	0.1μF,25V
C209			NCB21CK-224X	CAPACITOR	0.22μF,16V	C3013			NCF21EZ-104X	CAPACITOR	0.1μF,25V
C211			QEKJ1HM-105	E CAPACITOR	1μF,50V	C3014			NCF21CZ-105X	CAPACITOR	1μF,16V

REF No.	PART No.	PART NAME, DESCRIPTION	#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
C3015	QEKJ1CM-106	E CAPACITOR	10μF,16V	L13	QQL29BJ-100Z	COIL	10μH
C3016	NCB21HK-103X	CAPACITOR	0.01μF,50V	L16	QQL29BJ-101Z	COIL	100μH
C3017	NDC21HJ-150X	CAPACITOR	15pF,50V	L17	QQLZ011-120Z	COIL	12μH
C3019	NDC21HJ-180X	CAPACITOR	18pF,50V	L202	QQL29BJ-330Z	COIL	33μH
C3022	NCF21CZ-105X	CAPACITOR	1μF,16V	L203	QQL29BJ-220Z	COIL	22μH
C3025	QEKJ1HM-106	E CAPACITOR	10μF,50V	L204	QQL01BK-100Z	COIL	10μH
C3026	NCB21HK-103X	CAPACITOR	0.01μF,50V	L205	QQL29BJ-4R7Z	COIL	4.7μH
C3027	NCF21EZ-104X	CAPACITOR	0.1μF,25V	L2001	QQL29BJ-100Z	COIL	10μH
C3034	NCB21HK-221X	CAPACITOR	220pF,50V	△ L2251	QQL29BJ-470Z	COIL	47μH
C3036	QEKJ0JM-107	E CAPACITOR	100μF,6.3V	L3001	QQL231J-100Y	COIL	10μH
C3037	QETC0JM-477	E CAPACITOR	470μF,6.3V	L3003	QQL242J-100Z	COIL	10μH
C3304	NCF21CZ-105X	CAPACITOR	1μF,16V	L3004	QQL01BJ-101Z	COIL	100μH
C3305	NCF21EZ-104X	CAPACITOR	0.1μF,25V	L4001	QQL071J-270Y	COIL	27μH
C4001	NDC21HJ-101X	CAPACITOR	100pF,50V	L4002	QQL071J-270Y	COIL	27μH
C4002	NCB21HK-102X	CAPACITOR	0.001μF,50V	L5201	PELN1184	COIL	33μH
C4003	NDC21HJ-680X	CAPACITOR	68pF,50V	L5202	PELN1184	COIL	33μH
C4004	NCB21HK-102X	CAPACITOR	0.001μF,50V	L5301	QQL01BK-101Z	COIL	100μH
C4005	NDC21HJ-680X	CAPACITOR	68pF,50V	CF3001	QAX0356-001Z	RESONATOR	
C4006	QEKJ1HM-105	E CAPACITOR	1μF,50V	CF3301	QAX0356-001Z	RESONATOR	
C4007	NCB21EK-104X	CAPACITOR	0.1μF,25V	X2	QAX0435-001	CRYSTAL RESONATOR	
C4008	NCB21EK-103X	CAPACITOR	0.01μF,25V	X3001	QAX0444-001	CRYSTAL RESONATOR	
C4010	QEKJ1CM-106	E CAPACITOR	10μF,16V	S3001	QSW0695-001	PUSH SWITCH,S CASS SW	
C4011	QEKJ0JM-107	E CAPACITOR	100μF,6.3V	S6050	QSW0460-001	SLIDE SWITCH	
C4013	QEKJ1CM-106	E CAPACITOR	10μF,16V	TU6001	QAU0014-002	TUNER	
C4015	NCB21HK-222X	CAPACITOR	0.0022μF,50V	TU6002	QAU0067-001	IF UNIT	
C4016	NDC21HJ-221X	CAPACITOR	220pF,50V	K5101	QQR0678-001Z	FERRITE BEAD	
C4105	NCB21EK-563X	CAPACITOR	0.056μF,25V	△ PC5101	PS2501-1	PH COUPLER	
C4106	NCB21HK-102X	CAPACITOR	0.001μF,50V	PS3001	GP3S123	PHOTOTRANSISTOR	
C5001	QFZ9051-683	F CAPACITOR	0.068μF,250V	PS3002	GP3S123	PHOTOTRANSISTOR	
C5004	QCZ9073-472	CAPACITOR	0.0047μF,125V	T2051	PELN0832	OSC TRANSFORMER	
C5006	QETM2DM-157	E CAPACITOR	150μF,200V	△ T5001	QQS0011-001	SW TRANSFORMER	
C5101	QCZ0212-472	CAPACITOR	0.0047μF,1kV	△ TB1	LP30360-007B	TERMINAL BOARD ASSY	
C5102	QCZ0302-330Z	CAPACITOR	33pF,1kV	ET1	LP40280-001B	EARTH PLATE	
C5104	QETC1HM-105	E CAPACITOR	1μF,50V	OT2	QYTDSF3010Z	SCREW,X2 TERMINAL	
C5105	QFN31HJ-183	F CAPACITOR	0.018μF,50V	OT3	QYTDSF2608M	SCREW,X2 S JACK	
C5107	QFV11HJ-104	F CAPACITOR	0.1μF,50V	SD1	LP30364-001A	SHIELD CASE(PRE/REC)	
C5201	QEMU0JM-227	E CAPACITOR	220μF,6.3V	HS1	PQ45788-1-2	HEAT SINK,Q5101	
C5202	QEMT1CM-827	E CAPACITOR	820μF,16V	OT1	QYTDST3006Z	SCREW,Q5101	
C5203	QETC1CM-227	E CAPACITOR	220μF,16V	J1	QNN0205-001	PIN JACK,REAR1 IN	
C5204	QEMT1AM-128	E CAPACITOR	1200μF,10V	J2	QNN0206-001	PIN JACK,REAR OUT	
C5205	QETC1AM-227	E CAPACITOR	220μF,10V	J5	QND0032-001	S JACK,S IN	
C5207	QETC1JM-106	E CAPACITOR	10μF,63V	J6	QND0032-001	S JACK,S OUT	
C5208	QETC1HM-106	E CAPACITOR	10μF,50V	△ F5001	QMF51N2-1R25J1	FUSE	T1.25A
C5301	QEMU0JM-227	E CAPACITOR	220μF,6.3V	FC5001	QNG0006-001Z	FUSE CLIP,F5001	
C5302	QETC1HM-106	E CAPACITOR	10μF,50V	FC5002	QNG0006-001Z	FUSE CLIP,F5001	
C5303	QETC1CM-107	E CAPACITOR	100μF,16V	J3001	PU61012	MINI JACK,COMP/R.PAUSE	
C5304	QFLC1HJ-183Z	F CAPACITOR	0.018μF,50V	J3002	PU61012	MINI JACK,C.BOX/DSS	
C5306	NCF21HZ-103X	CAPACITOR	0.01μF,50V	△ LF5002	QQR0532-001	LINE FILTER	
C5314	NCB21HK-102X	CAPACITOR	0.001μF,50V	△ SG5001	QAF0037-242Z	SURGE ABSORBER	
C5315	QETC1AM-107	E CAPACITOR	100μF,10V	△ VA5001	QAF0039-431	VARISTOR	
C6024	NCB21EK-563X	CAPACITOR	0.056μF,25V	△ VA5002	QAF0039-431	VARISTOR	
C6031	QETC1HM-106	E CAPACITOR	10μF,50V	CN1	QGF1018C1-11	FPC CONNECTOR,(1-11)U.DRUM	
C6033	NCB21HK-102X	CAPACITOR	0.001μF,50V	CN2	QGF1207C1-05	FPC CONNECTOR,(1-5)SW/DISPLAY	
C6050	NDC21HJ-101X	CAPACITOR	100pF,50V	CN2001	QGF1207C1-07	FPC CONNECTOR,(1-7)A/C HEAD	
L1	QQL29BJ-100Z	COIL	10μH	CN2002	QGB2532J1-02	CONNECTOR,(1-2)FE HEAD	
L2	QQL071J-100Y	COIL	10μH	CN3001	QGB2015M1-08	CONNECTOR,(1-8)CAP.MOTOR	
L4	QQL29BJ-100Z	COIL	10μH	CN3003	QGB2532J1-02	CONNECTOR,(1-2)L.MOTOR	
L7	QQL29BJ-470Z	COIL	47μH	CN3004	QGB2534J2-04	CONNECTOR,(1-4)R.ENCODER	
L8	QQL29BJ-680Z	COIL	68μH	CN3005	QGF1207C1-12	FPC CONNECTOR,(1-12)SW/DISPLAY	
L9	QQL29BJ-220Z	COIL	22μH	CN3006	QGF1207C1-07	FPC CONNECTOR,(1-7)JOG	
L10	QQL29BJ-100Z	COIL	10μH	CN4001	QGF1207C1-04	FPC CONNECTOR,(1-4)DRUM.MDA	

#	△	REF No.	PART No.	PART NAME, DESCRIPTION
△		CN5001	QGA7901C1-02	CONNECTOR,(1-2)AC IN
△		CP3001	ICP-N10	CIRCUIT PROTECTOR
△		CP4001	ICP-N15	CIRCUIT PROTECTOR
△		CP5301	ICP-N25	CIRCUIT PROTECTOR
△		CP5302	ICP-N25	CIRCUIT PROTECTOR

2D SVHS BOARD ASSEMBLY <05>

PW1	LPA10017-04B	2D SVHS BOARD ASSY	
IC1001	JCP8008	IC	
IC1002	VC2076DP	IC	
IC1201	JCP8013	IC	
Q1011	2SA1576A/QR/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
Q1013	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
Q1016	DTC144WU	TRANSISTOR	
	or RN1309	TRANSISTOR	
	or UN521E	TRANSISTOR	
Q1201	2SC4081/QRS/-X	TRANSISTOR	
Q1202	2SC4081/QRS/-X	TRANSISTOR	
Q1205	2SC4081/QRS/-X	TRANSISTOR	
Q1206	2SC4081/QRS/-X	TRANSISTOR	
Q1207	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
Q1208	2SC4081/QRS/-X	TRANSISTOR	
Q1209	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1210	2SC4081/QRS/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
Q1212	2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
	or 2SB1218A/QR/-X	TRANSISTOR	
Q1213	2SA1576A/QR/-X	TRANSISTOR	
Q1215	2SC4081/QRS/-X	TRANSISTOR	
	or 2PC4081/R/-X	TRANSISTOR	
	or 2SD1819A/QRS/-X	TRANSISTOR	
Q1217	2SC4081/QRS/-X	TRANSISTOR	
Q1218	2SA1576A/QR/-X	TRANSISTOR	
Q1219	2SA1576A/QR/-X	TRANSISTOR	
R1002	NRSA02J-103X	MG RESISTOR	10kΩ,1/10W
R1003	NRSA02J-221X	MG RESISTOR	220Ω,1/10W
R1004	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R1006	NRSA02J-224X	MG RESISTOR	220kΩ,1/10W
R1007	NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W
R1010	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
R1011	NRVA02D-332X	CMF RESISTOR	3.3kΩ,1/10W
R1012	NRVA02D-152X	CMF RESISTOR	1.5kΩ,1/10W
R1013	NRVA02D-471X	CMF RESISTOR	470Ω,1/10W
R1014	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W
R1015	NRVA02D-102X	CMF RESISTOR	1kΩ,1/10W

#	△	REF No.	PART No.	PART NAME, DESCRIPTION	
R1016		NRSA02J-122X	MG RESISTOR	1.2kΩ,1/10W	
R1017		NRSA02J-162X	MG RESISTOR	1.6kΩ,1/10W	
R1018		NRSA02J-151X	MG RESISTOR	150Ω,1/10W	
R1019		NRSA02J-391X	MG RESISTOR	390Ω,1/10W	
R1020		NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W	
R1021		NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W	
R1038		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W	
R1039		NRSA02J-394X	MG RESISTOR	390kΩ,1/10W	
R1040		NRSA02J-101X	MG RESISTOR	100Ω,1/10W	
R1041		QRE123J-391X	RESISTOR	390Ω,1/2W	
R1049		NRSA02J-475X	MG RESISTOR	4.7MΩ,1/10W	
R1050		NRSA02J-101X	MG RESISTOR	100Ω,1/10W	
R1051		QRE123J-391X	RESISTOR	390Ω,1/2W	
R1201		NRSA02J-153X	MG RESISTOR	15kΩ,1/10W	
R1202		NRSA02J-223X	MG RESISTOR	22kΩ,1/10W	
R1203		NRSA02J-681X	MG RESISTOR	680Ω,1/10W	
R1204		NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W	
R1205		NRSA02J-182X	MG RESISTOR	1.8kΩ,1/10W	
R1206		NRSA02J-101X	MG RESISTOR	100Ω,1/10W	
R1207		NRSA02J-101X	MG RESISTOR	100Ω,1/10W	
R1208		NRSA02J-471X	MG RESISTOR	470Ω,1/10W	
R1209		NRSA02J-563X	MG RESISTOR	56kΩ,1/10W	
R1210		NRSA02J-103X	MG RESISTOR	10kΩ,1/10W	
R1211		NRSA02J-821X	MG RESISTOR	820Ω,1/10W	
R1212		NRSA02J-331X	MG RESISTOR	330Ω,1/10W	
R1213		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1214		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1215		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1216		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1218		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1219		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1220		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1223		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1225		NRSA02J-0R0X	MG RESISTOR	0Ω,1/10W	
R1226		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W	
R1227		NRSA02J-180X	MG RESISTOR	18Ω,1/10W	
R1228		NRSA02J-822X	MG RESISTOR	8.2kΩ,1/10W	
R1229		NRSA02J-471X	MG RESISTOR	470Ω,1/10W	
R1230		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1231		NRSA02J-151X	MG RESISTOR	150Ω,1/10W	
R1232		NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W	
R1233		NRSA02J-681X	MG RESISTOR	680Ω,1/10W	
R1234		NRSA02J-222X	MG RESISTOR	2.2kΩ,1/10W	
R1235		NRSA02J-391X	MG RESISTOR	390Ω,1/10W	
R1236		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1237		NRSA02J-123X	MG RESISTOR	12kΩ,1/10W	
R1238		NRSA02J-223X	MG RESISTOR	22kΩ,1/10W	
R1239		NRSA02J-471X	MG RESISTOR	470Ω,1/10W	
R1242		NRSA02J-471X	MG RESISTOR	470Ω,1/10W	
R1243		NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W	
R1244		NRSA02J-470X	MG RESISTOR	47Ω,1/10W	
R1245		NRSA02J-470X	MG RESISTOR	47Ω,1/10W	
R1246		NRSA02J-151X	MG RESISTOR	150Ω,1/10W	
R1247		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1248		NRSA02J-821X	MG RESISTOR	820Ω,1/10W	
R1249		NRSA02J-152X	MG RESISTOR	1.5kΩ,1/10W	
R1250		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1251		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1256		NRSA02J-102X	MG RESISTOR	1kΩ,1/10W	
R1259		NRSA02J-272X	MG RESISTOR	2.7kΩ,1/10W	
R1260		NRSA02J-101X	MG RESISTOR	100Ω,1/10W	

REF No.	PART No.	PART NAME, DESCRIPTION	#	△ REF No.	PART No.	PART NAME, DESCRIPTION	
R1261	NRSA02J-271X	MG RESISTOR	270Ω,1/10W	C1210	NCF21EZ-104X	CAPACITOR	0.1μF,25V
R1262	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W	C1211	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
R1263	NRSA02J-101X	MG RESISTOR	100Ω,1/10W	C1212	NCF21EZ-104X	CAPACITOR	0.1μF,25V
R1264	NRSA02J-332X	MG RESISTOR	3.3kΩ,1/10W	C1213	NCB21EK-473X	CAPACITOR	0.047μF,25V
VR1201	QVPA606-103Z	V RESISTOR,Y LEVEL ADJ		C1214	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1001	QEKJ1EM-475	E CAPACITOR	4.7μF,25V	C1215	NCB21HK-102X	CAPACITOR	0.001μF,50V
C1002	QEKJ1HM-474	E CAPACITOR	0.47μF,50V	C1216	NCF21CZ-105X	CAPACITOR	1μF,16V
C1003	QEKJ1CM-106	E CAPACITOR	10μF,16V	C1217	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1005	QEKJ1EM-475	E CAPACITOR	4.7μF,25V	C1218	QEKJ0JM-107	E CAPACITOR	100μF,6.3V
C1006	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1219	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1009	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1220	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1010	NCF21EZ-104X	CAPACITOR	0.1μF,25V	C1221	QEKJ1EM-475	E CAPACITOR	4.7μF,25V
C1011	NDC21HJ-330X	CAPACITOR	33pF,50V	C1222	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1013	NCF21EZ-104X	CAPACITOR	0.1μF,25V	C1223	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1014	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1224	NDC21HJ-390X	CAPACITOR	39pF,50V
C1015	QEKJ1EM-475	E CAPACITOR	4.7μF,25V	C1225	NDC21HJ-220X	CAPACITOR	22pF,50V
C1016	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1226	NDC21HJ-6R0X	CAPACITOR	6pF,50V
C1019	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1227	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1020	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1228	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1021	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1229	NDC21HJ-470X	CAPACITOR	47pF,50V
C1022	QEKJ1HM-105	E CAPACITOR	1μF,50V	C1230	NDC21HJ-100X	CAPACITOR	10pF,50V
C1023	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1231	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1024	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1232	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1026	NCF21EZ-104X	CAPACITOR	0.1μF,25V	C1233	NDC21HJ-680X	CAPACITOR	68pF,50V
C1027	NCF21EZ-104X	CAPACITOR	0.1μF,25V	C1234	NDC21HJ-391X	CAPACITOR	390pF,50V
C1028	QEKJ0JM-337	E CAPACITOR	330μF,6.3V	C1235	NDC21HJ-8R0X	CAPACITOR	8pF,50V
C1029	QEKJ1HM-104	E CAPACITOR	0.1μF,50V	C1236	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1030	QEKJ1HM-105	E CAPACITOR	1μF,50V	C1237	NDC21HJ-221X	CAPACITOR	220pF,50V
C1031	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1238	NCB21HK-103X	CAPACITOR	0.01μF,50V
C1032	QEKJ1HM-105	E CAPACITOR	1μF,50V	C1239	NDC21HJ-470X	CAPACITOR	47pF,50V
C1033	QEKJ1HM-105	E CAPACITOR	1μF,50V	C1240	NDC21HJ-470X	CAPACITOR	47pF,50V
C1034	QEKJ1HM-105	E CAPACITOR	1μF,50V	C1245	NDC21HJ-120X	CAPACITOR	12pF,50V
C1035	QEKJ1EM-475	E CAPACITOR	4.7μF,25V	C1246	NDC21HJ-470X	CAPACITOR	47pF,50V
C1036	QEKJ1EM-475	E CAPACITOR	4.7μF,25V	C1247	NDC21HJ-470X	CAPACITOR	47pF,50V
C1037	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1248	NDC21HJ-470X	CAPACITOR	47pF,50V
C1038	QEKJ1HM-225	E CAPACITOR	2.2μF,50V	C1250	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1039	QEKJ0JM-337	E CAPACITOR	330μF,6.3V	C1251	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1040	NCB21HK-103X	CAPACITOR	0.01μF,50V	C1252	NCF21EZ-104X	CAPACITOR	0.1μF,25V
C1041	NDC21HG-301X	CAPACITOR	300pF,50V	L1001	QQL29BJ-220Z	COIL	22μH
C1042	NDC21HG-301X	CAPACITOR	300pF,50V	L1004	QQL071J-680Y	COIL	68μH
C1043	NDC21HG-221X	CAPACITOR	220pF,50V	L1006	QQL29BJ-101Z	COIL	100μH
C1044	NDC21HG-820X	CAPACITOR	82pF,50V	L1010	QQL29BJ-4R7Z	COIL	4.7μH
C1045	NCB21HK-103X	CAPACITOR	0.01μF,50V	L1201	QQL29BJ-101Z	COIL	100μH
C1046	NDC21HG-271X	CAPACITOR	270pF,50V	L1202	QQL29BJ-101Z	COIL	100μH
C1047	NDC21HJ-101X	CAPACITOR	100pF,50V	L1203	QQL29BJ-101Z	COIL	100μH
C1048	NDC21HJ-181X	CAPACITOR	180pF,50V	L1204	QQL071J-330Y	COIL	33μH
C1049	NDC21HG-301X	CAPACITOR	300pF,50V	L1205	QQL071J-150Y	COIL	15μH
C1050	NDC21HG-301X	CAPACITOR	300pF,50V	L1206	QQL071J-100Y	COIL	10μH
C1077	QEKJ1CM-107	E CAPACITOR	100μF,16V	L1207	QQL071J-8R2Y	COIL	8.2μH
C1078	NCB21HK-103X	CAPACITOR	0.01μF,50V	LC1201	QQR0657-013Z	NOISE FILTER	
C1079	QETC0JM-108	E CAPACITOR	1000μF,6.3V	SD1	LP30405-001B	SHIELD CASE(S-VHS)	
C1082	NCB21HK-103X	CAPACITOR	0.01μF,50V	SD2	LP30406-001A	SHIELD PLATE(S-VHS)	
C1201	QEKJ0JM-337	E CAPACITOR	330μF,6.3V	BK1	LP40077-001A	BRACKET(BOARD)	
C1202	NCB21HK-103X	CAPACITOR	0.01μF,50V	CN1001	QGG2503K2-20	HEADER PIN,(11-30)MAIN	
C1203	NCF21EZ-104X	CAPACITOR	0.1μF,25V	CN1002	QGG2503K2-30	HEADER PIN,(1-30)MAIN	
C1204	NCF21EZ-104X	CAPACITOR	0.1μF,25V				
C1205	NCF21EZ-104X	CAPACITOR	0.1μF,25V				
C1206	NCF21EZ-104X	CAPACITOR	0.1μF,25V				
C1207	NCF21EZ-104X	CAPACITOR	0.1μF,25V				
C1208	NCF21EZ-104X	CAPACITOR	0.1μF,25V				
C1209	NCF21CZ-105X	CAPACITOR	1μF,16V				

#	△ REF No.	PART No.	PART NAME, DESCRIPTION

AUDIO CONTROL BOARD ASSEMBLY <12>

PW1	LPA10010-01A1	A/C HEAD BOARD ASSY
CN1	QGF1208F1-07	FPC CONNECTOR

DEMOD BOARD ASSEMBLY <14>

PW1	PB11076A	DEMOD BOARD ASSY	
IC1501	UPC1852AGT	IC	
	or UPC1854AGT	IC	
R1501	QRE141J-102Y	RESISTOR	1kΩ, 1/4W
R1502	QRE141J-334Y	RESISTOR	330kΩ, 1/4W
R1503	QRE141J-124Y	RESISTOR	120kΩ, 1/4W
R1504	QRE141J-302Y	RESISTOR	3kΩ, 1/4W
R1505	QRE141J-512Y	RESISTOR	5.1kΩ, 1/4W
R1506	QRE141J-333Y	RESISTOR	33kΩ, 1/4W
R1507	QRE141J-333Y	RESISTOR	33kΩ, 1/4W
R1508	QRE141J-392Y	RESISTOR	3.9kΩ, 1/4W
R1509	QRE141J-122Y	RESISTOR	1.2kΩ, 1/4W
R1510	QRE141J-392Y	RESISTOR	3.9kΩ, 1/4W
R1511	QRE141J-122Y	RESISTOR	1.2kΩ, 1/4W
R1517	QRE141J-123Y	RESISTOR	12kΩ, 1/4W
C1501	QETC1CM-226	E CAPACITOR	22μF, 16V
C1502	QETC1HM-104	E CAPACITOR	0.1μF, 50V
C1503	QETC1HM-105	E CAPACITOR	1μF, 50V
C1504	QETC1HM-475	E CAPACITOR	4.7μF, 50V
C1505	QETC1HM-225	E CAPACITOR	2.2μF, 50V
C1506	QETC1HM-104	E CAPACITOR	0.1μF, 50V
C1507	QFV11HJ-473	F CAPACITOR	0.047μF, 50V
C1508	QETC1HM-474	E CAPACITOR	0.47μF, 50V
C1509	QETC1HM-104	E CAPACITOR	0.1μF, 50V
C1510	QETC1HM-105	E CAPACITOR	1μF, 50V
C1511	QETC1HM-105	E CAPACITOR	1μF, 50V
C1512	QETC1HM-105	E CAPACITOR	1μF, 50V
C1513	QEE81CJ-335	T CAPACITOR	3.3μF, 16V
C1514	QEE81CJ-106	T CAPACITOR	10μF, 16V
C1515	QETC1HM-105	E CAPACITOR	1μF, 50V
C1516	QETC1HM-106	E CAPACITOR	10μF, 50V
C1517	QETC1HM-106	E CAPACITOR	10μF, 50V
C1518	QETC1HM-105	E CAPACITOR	1μF, 50V
C1521	QETC1HM-106	E CAPACITOR	10μF, 50V
BK1	LP40077-001A	BRACKET(BOARD)	
CN1501	QGG2502K1-09	HEADER PIN,(1-9)MAIN	

MV/CM BOARD ASSEMBLY <23>

PW1	LPA10013-01C	MV/CM ADV BOARD ASSY
IC7401	AN3275SB	IC
Q7401	2SD1819A/QRS/-X	TRANSISTOR
	or 2PC4081/R/-X	TRANSISTOR
	or 2SC4081/QRS/-X	TRANSISTOR

#	△ REF No.	PART No.	PART NAME, DESCRIPTION
Q7402	2SB1218A/QR/-X	TRANSISTOR	
	or 2SA1576A/QR/-X	TRANSISTOR	
	or 2PA1576/R/-X	TRANSISTOR	
R7404	NRSA02J-473X	MG RESISTOR	47kΩ, 1/10W
R7408	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R7409	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R7410	NRSA02J-393X	MG RESISTOR	39kΩ, 1/10W
R7421	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R7422	NRSA02J-103X	MG RESISTOR	10kΩ, 1/10W
R7427	NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W
R7428	NRSA02J-153X	MG RESISTOR	15kΩ, 1/10W
R7429	NRSA02J-122X	MG RESISTOR	1.2kΩ, 1/10W
R7430	NRSA02J-102X	MG RESISTOR	1kΩ, 1/10W
R7431	NRSA02J-271X	MG RESISTOR	270Ω, 1/10W
R7437	NRSA02J-0R0X	MG RESISTOR	0Ω, 1/10W
R7438	NRSA02J-332X	MG RESISTOR	3.3kΩ, 1/10W
R7439	NRSA02J-222X	MG RESISTOR	2.2kΩ, 1/10W
R7440	NRSA02J-473X	MG RESISTOR	47kΩ, 1/10W
C7401	QDYB1CM-103Y	CAPACITOR	0.01μF, 16V
C7402	QETC1CM-476	E CAPACITOR	47μF, 16V
C7403	QFN31HJ-272	F CAPACITOR	0.0027μF, 50V
C7406	NCB21HK-222X	CAPACITOR	0.0022μF, 50V
C7407	NCB21HK-103X	CAPACITOR	0.01μF, 50V
C7411	NCB21HK-103X	CAPACITOR	0.01μF, 50V
C7414	QFV91HJ-104	F CAPACITOR	0.1μF, 50V
C7415	QFV91HJ-224	F CAPACITOR	0.22μF, 50V
C7416	NCB21HK-103X	CAPACITOR	0.01μF, 50V
C7417	NCB21HK-103X	CAPACITOR	0.01μF, 50V
C7419	NCB21EK-104X	CAPACITOR	0.1μF, 25V
C7420	NDC21HJ-390X	CAPACITOR	39pF, 50V
C7421	QETC1HM-105	E CAPACITOR	1μF, 50V
C7425	NCB21HK-102X	CAPACITOR	0.001μF, 50V
C7426	QEKC1HM-225	E CAPACITOR	2.2μF, 50V
C7427	NCF21EZ-104X	CAPACITOR	0.1μF, 25V
C7430	NCB21HK-562X	CAPACITOR	0.0056μF, 50V
C7431	NCB21HK-473X	CAPACITOR	0.047μF, 50V
C7432	NCB21HK-223X	CAPACITOR	0.022μF, 50V
L7401	QQL01BK-100Z	COIL	10μH
L7402	QQL231J-470Y	COIL4	47μH
FL7401	PELN1137	LOW PASS FILTER	
BK1	LP40077-001A	BRACKET(PWB)	
CN7402	QGG2502K1-08	HEADER PIN,(1-8)MAIN	

SW/DISPLAY BOARD ASSEMBLY <28>

PW1	LPA10018-09B1	DISPLAY BOARD ASSY
IC7001	M35500BFP	IC
	or M35500AGP	IC
	or M35500BGP	IC
IC7002	PNA4652M00XB	IR DETECT UNIT
	or GP1U281X	IR DETECT UNIT
D7002	RD9.1ES/B2/-T2	ZENER DIODE
	or MTZJ9.1B	ZENER DIODE
	or UZ9.1BSB	ZENER DIODE
D7005	1N4148M	DIODE
	or 1SS133	DIODE
D7010	SLR-342VC3F	LE DIODE

REF No.	PART No.	PART NAME, DESCRIPTION	
R7001	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7002	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7003	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7004	QRE141J-471Y	RESISTOR	470Ω,1/4W
R7005	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7006	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7007	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7008	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7011	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7012	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7013	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7014	QRE141J-470Y	RESISTOR	47Ω,1/4W
R7015	QRE141J-0R0Y	RESISTOR	0Ω,1/4W
R7020	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7021	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R7022	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7023	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7024	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7025	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7026	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
R7027	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7028	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7030	QRE141J-103Y	RESISTOR	10kΩ,1/4W
R7031	QRE141J-122Y	RESISTOR	1.2kΩ,1/4W
R7032	QRE141J-182Y	RESISTOR	1.8kΩ,1/4W
R7033	QRE141J-222Y	RESISTOR	2.2kΩ,1/4W
R7034	QRE141J-272Y	RESISTOR	2.7kΩ,1/4W
R7035	QRE141J-472Y	RESISTOR	4.7kΩ,1/4W
R7036	QRE141J-682Y	RESISTOR	6.8kΩ,1/4W
R7037	QRE141J-153Y	RESISTOR	15kΩ,1/4W
R7038	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7041	QRE141J-331Y	RESISTOR	330Ω,1/4W
R7050	QRE141J-393Y	RESISTOR	39kΩ,1/4W
R7191	QRE141J-750Y	RESISTOR	75Ω,1/4W
C7001	QDV81EZ-223Y	CAPACITOR	0.022μF,25V
C7002	QEK01HM-106	E CAPACITOR	10μF,50V
C7007	QEKJ1CM-476	E CAPACITOR	47μF,16V
C7008	QDV81EZ-223Y	CAPACITOR	0.022μF,25V
C7009	QCSB1HJ-150	CAPACITOR	15pF,50V
C7010	QCFB1HZ-104	CAPACITOR	0.1μF,50V
C7011	QEKJ0JM-337	E CAPACITOR	330μF,6.3V
S7001	QSW0619-002Z	TACT SWITCH,POWER	
S7002	QSW0619-002Z	TACT SWITCH,CH+	
S7003	QSW0619-002Z	TACT SWITCH,CH-	
S7004	QSW0619-002Z	TACT SWITCH,REC	
S7005	QSW0619-002Z	TACT SWITCH,PAUSE	
S7008	QSW0619-002Z	TACT SWITCH,FF	
S7009	QSW0619-002Z	TACT SWITCH,REW	
S7010	QSW0619-002Z	TACT SWITCH,MENU	
S7011	QSW0619-002Z	TACT SWITCH,OK	
S7012	QSW0619-002Z	TACT SWITCH,REVIEW	
S7013	QSW0619-002Z	TACT SWITCH,ST BOX	
S7014	QSW0619-002Z	TACT SWITCH,SP/EP	
S7015	QSW0619-002Z	TACT SWITCH,TV/VCR	
DI7001	QLF0031-002	FL TUBE	
HD1	LP30140-001A	FDP HOLDER L,DI7001	
HD2	LP30141-001A	FDP HOLDER R,DI7001	
HD4	PQM30038-6	LED HOLDER,D7010	
FW7001	QJM032-07A4A4	PARA RIBON WIRE	
J7191	PEMC1126	PIN JACK,VIDEO IN	
J7192	PEMC0922	PIN JACK(SW),AUDIO IN(L)	

# △ REF No.	PART No.	PART NAME, DESCRIPTION
J7193	PEMC0922	PIN JACK(SW),AUDIO IN(R)
CN7001	QGF1208C1-12	FPC CONNECTOR,(1-12)MAIN
CN7191	QGF1207C1-05	FPC CONNECTOR,(3-7)MAIN

REC SAFETY BOARD ASSEMBLY <32>

PW2	LPA10018-01B2	REC SAFETY BOARD ASSY
S7041	QSW0602-002	PUSH SWITCH

JOG BOARD ASSEMBLY <37>

PW3	LPA10018-01B3	JOG BOARD ASSY
UN7091	PEME0786-02	JOG SHUTTLE ASSY
CN7005	QGF1207F1-07	FPC CONNECTOR,(1-7)MAIN

LOADING MOTOR BOARD ASSEMBLY <55>

PW2	LPA10010-01A2	L.MOTOR BOARD ASSY
CN1	QGB2533K1-02	CONNECTOR